

Comprehensive figure skating coaching with 6 to 8 year old children

Kati Mälkki

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<p>Authors Kati Mälkki</p>	<p>Group DP IV</p>
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<p>Supervisors Kari Savolainen, Riina Valto</p>	
<p>The purpose of this thesis was to research how children 6 to 8 year olds can be coached in a comprehensive way in figure skating. Nowadays children in general are in a poor physical condition and are not participating in a great variety of physical activity, in particular during their freetime. There are many children active in an organized sport club, in this case figure skating, so in my opinion they have the responsibility to offer the children enough stimuli to gain versatile motoric skills, although not with the expense of sport specific training. The question is how versatile practices can we offer inside one sport?</p> <p>The theory part of the thesis concentrates in general in children's exercise, main organ systems of human body and their development in childhood, motoric skills and their sensitive periods. The main target group in the thesis is 6 to 8 year old children, who practice figure skating so therefore the theory part has been investigated mainly from this group's point of view.</p> <p>The empirical part of the thesis was carried out by sending a questionnaire to figure skating organizations, which are under the Finnish Figure Skating Association. The reason why I wanted to execute this questionnaire was to investigate the current situation in our country in relation to the topic of this work. What is the real situation today in the figure skating clubs and how do they develop their athletes in a versatile way starting from the early childhood? Or is it neglected, and focused only on the sport-specific skills? The reason why I wanted to do this questionnaire was also to give solid fact of the situation, rather than just making general assumptions. All in all, the empirical part is a supporting element for this thesis.</p> <p>Based on the theory part and the results from the empirical part, I have assembled a package of practices of ways to practice different physical features in a versatile way that can be executed in practices in figure skating clubs nationwide. This material will be sent to all respondents and also forwarded to Finnish Figure Skating Association for more research.</p> <p>I have made some more suggestions and recommendations based on this research at the end of my thesis.</p>	
<p>Key words figure skating, coaching, versatility , children</p>	

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1 Introduction

When children move in a versatile way, they develop their basic motor skills, basic physical qualities and general skill factors, and they practice sports effectively, sometimes to exhaustion and at other times calmly and thus learning to concentrate. A child is more adaptable to learn sport-specific skills and to practice both skill and physical qualities when he / she has been moving in a versatile way in early childhood. Versatile practicing also maintains the child's interest towards exercising and the variety in sport practicing will ensure that the child grows up to enjoy sports and will remain throughout their lives. (Nuori Suomi 2009, 9.)

“Many children start an organized sport much earlier than before, and will become focused in one sport only. Amount of practices increase rapidly and the requirements of that specific sport will be focused on during the whole year” (Hakkarainen et al, 2009, 37). According to researches done in favor of becoming an expert in one sport, it is said that to reach the expertise level the athlete should have at least 10 000 hours of practice. In addition, the practice should be very sport specific, which means lot of repetitions to reach demanding skills.

Figure skating is a so called early specific sport, which means that children will start to do sport specific exercises at a very early age. Coaches are demanded to focus only on the sport specific exercises already with very young children, and therefore as a consequence other important skills are left with very little time. This will be seen in later age periods, e.g. lack in coordination skills. To reach the top, it is no longer sufficient to be a jump expert; on the contrary the skater needs to be versatile. To gain these requirements, the athlete needs to possess good motor skills, strong physic as well as consistent progress and versatile practicing of basic skating skills. (Hakkarainen et al 2009, 445.)

There are a lot of drop-outs in figure skating, because the demands of the sport are very critical. Children at the age of 6 to 8 have practices already varying between 4-7 hours per week. As the youngest competition series already start at the age of 7, the children must have gained a high level of certain excellence in the sport. All ice time needs to be used in teaching and learning sport specific skills, such as jumps and spins, there is a very little time left for other general sport skills. Anyhow, we must ask ourselves, have we lost some potential talents just because they haven't been at the required level at a certain age, even though they might have been able to reach the same level in just a few years? Is it possible to reach a high level of skills at a later age, if the children are offered more versatile practices instead of purely sport specific training? In literature it is stated that instead of focusing on a singular sport, coaches

should emphasize larger concepts of sport organisation; skill sports, speed-and power sports, ball games and endurance sports. All in all, in figure skating practice plan needs to cover a lot of skill practicing and sport-specific training, this is not the case. The concern is how to add other versatile practices to the season plan without deducting hours from the skill area?

In today's figure skating world, coaches and parents have high expectations for their children and their success in a chosen sport. As the amounts of practices and their financial costs increase in a short period of time, children and parents have less time and resources for extra sport activities. In many sport, especially in skill sports, the emphasis is on the early sport specific skill learning already under the age of 10. Sport specific skills can and should be trained as long as it has been made sure that needed skills; skill and condition factors and control of basic movements are on the level required by the sport specific skills.

Basic sport-specific skills are based on the fundamental movement skills, which are determined and guided, as in all sport-specific skill areas, by general skill factors. Every successful performance requires control of balance, rhythmisation - and reaction ability, all this is crucial in figure skating elements. More of these areas are discussed e.g. in the chapter 2. Basic physical qualities are speed, endurance, strength and mobility. All qualities should be trained in early childhood and they need to be trained especially in figure skating, because new skills can only be learned and reach their fluent stage when basic physical features are at desirable level. (Nurori Suomi 2009, 10.)

To quote Mikael Forssell, player of the Men's Finnish Football Team; "If one wants to exaggerate a little bit, I practiced independently all day long every day. So mainly my skills have developed through these own practices, so I am not a result of any structured system" (Mikael Forssell, Men's Finnish National Football Team).

1.1 Purpose and objectives

When I started to think of a possible topic for my thesis, I had a special personal interest in developing the figure skating coaching for small children. I discussed about this with my own figure skating club, and after long discussions, the topic started to have its frames. Nowadays the lack of versatile exercising can be seen in the children's physical behavior, and this creates challenges in figure skating coaching, which demands good physical characters at a very young age. Although there are many researches done in this field, I wanted to investigate the matter more myself.

This thesis emphasizes the developing of versatile physical exercises that will support and facilitate the skill teaching on the ice. I will not delve into the specific skill teaching areas, as on the background of this thesis there is an assumption that this area is in control, and will not need improvement. Moreover, the purpose of this thesis is to study the physical qualities of a 6 to 8 year old child and how to develop those qualities in figure skating. I also wanted to research how young children could be coached in a comprehensive way in figure skating.

The objective of the research was to focus on the physical attributes of children 6 to 8 years old, and their development. I have investigated how they develop in general and how the physical attributes affect the improvement in skill learning. Each skill performance requires optimal cooperation of different parts of the organism to be successful, and these prerequisites are called physical factors. To learn and automatize a skill, endurance, strength, speed and mobility need to be at a certain level. (Miettinen 1999, 58.) These qualities are studied later on in the thesis.

1.2 Structure and limitations

The study was limited to the figure skating organizations nationwide under the Finnish Figure Skating Association and forwarded to those coaches responsible for the age group 6 to 8 years old, who practice and compete in the "Tintit"-league. The sample was not limited by any other methods.

The study investigates the methods of versatile practicing of other figure skating organizations, in order to receive a studied base for any assumptions made in accordance to critiquing the versatility of figure skating practices.

In this thesis I have excluded the area of skill teaching and how children learn a skill. This matter relates to the topic of my thesis, but at the end I decided to limit the thesis structure to focus on the physical attributes and their development in figure skating coaching and research how this type of practicing supports and benefits the ability of skill learning. As an assumption I had that the skill learning and teaching are already being practiced and do not need special attention.

The thesis is divided into three parts; theory, empirical and material part. Chapters 2, 3, 4 and 5 present the theory, chapter 6 presents the empirical part, and chapter 7 presents the material package prepared for figure skating coaches and as a base for more research by the Finnish Figure Skating Association. Chapter 2 shows the 6 to 8 year old children as overall exercisers, chapter 3 focuses on the development of main organ systems of a 6 to 8 year old child. Chapter 4 studies the meaning and purpose of sensitive periods and their importance in sports in general and more closely in figure skating. Skill factors are presented and defined at Chapter 5. Chapter 6 presents the study of figure skating organizations at the empirical research, its results and conclusions. Chapter 7 gathers the study material together, presents the methods to practice physical characters at childhood and presents a package including example practices, games and plays. Chapter 8 is a summary concluding the main issues of the thesis.

2 6 to 8 year old child as an exerciser

The physical development of children is always individual. Learning motor skills always requires a certain level of physical maturity and development of nervous system. When dealing with children, it is important to remember that even though the child may not be at an average stage of physical development, he or she can be as talented. Taking this into consideration, there are general guidelines about children's physical development. As these are guidelines, some of the qualities can be learned later on, but the child is more receptive to these physical aspects at the determined age.

Children aged 6 to 8 years old should have already learned to control his or her own movement and movements are fluent. Children are also able to combine different movements together better than before. Their balance has improved; children are able to stand on one foot, balance on an unstable object and ability to kick a ball. Balance still needs to be practiced most from the skill abilities as it is a foundation in many ways to movements. (Hakkarainen et al, 112. Karvinen et al. 86). At this age a child is capable of starting any sport, although it does require improved body control and mobility. To reach that level of development, the child needs to have been learned to use his / her body in different positions and functions. (Autio & Kaski 2005, 30.)

Table 1. Basic motor skills (Hakkarainen et al. 2009 241; Lapsi ja urheilu, 59)

Basic motor skills		
Balance skills	Movement skills	Equipment control
turning	walking	throwing
stretching	running	catching
bending	exertion	kicking
spinning	leaping	scooping
waving	jumping	punching
rolling	loping	hitting from the air
stopping	gliding	bouncing
dodging	striding	rolling
balancing	climbing	kicking from the air

A 6-year old child controls most of the basic motor skills (Table 1.) and their simple combinations. Six year old children usually aim to learn different skills and they enjoy expressing them-

selves. At this age, children are able to learn basic sport-specific skills; as long as he or she possesses the underlying basic motor skills, combinations and skill factors (e.g. balance) are developed enough. Extension of limbs can still be limited at the age of 6. This needs to be taken into consideration especially in figure skating. Already with 6 year old children, coaches focus attention on the positions and extensions of hands and leg. This seems to be a little bit contrary to the children's physical ability at this age.

Table 2. Stages of children's motoric development (Hakkarainen et al, 242)

Stage	Calendar age
1. Stage of reflective functions	0 - 1 years
2. Stage of embracing primitive skills	1 - 2 years
3. Stage of learning basic motor skills	2 - 7 years
4. Stage of learning sport-specific skills	7 - 15 years
5. Stage of utilization of learned skills	>15 years

As the table 2. presents, children aged 6 to 8 years old, are still learning basic motor skills, and are only transferring to the next stage, which is learning the sport-specific skills. Basic motor skills and general skill factors can be practiced separately, in most cases they develop naturally, but the coach must be aware of the child's shortcomings in these areas and to consider them in practices. As an example, the figure skating coach must ensure first that the child has learned a correct rhythmisation and position in skating - only after this it is possible to teach jumping technique. (Hakkarainen et al 2009, 242; Nuori Suomi 2009, 10.)

Children aged 7 to 8 years old are ready to face challenges and eager to learn new skills. From physical point of view the child is experiencing a fast developing stage. Basic motor skills take shape of general and adjustable schemas. Development of these schemas facilitates learning sport-specific skills (Karvinen et al 1991, 93). All in all, the more versatile the child has learned to use his / her body in exercise; the better it is for their overall physical development. Also it enables becoming an expert in one sport, or changing the sport at a later age; although the most important thing to remember is that the children will learn a life-time pattern for exercise, no matter what the sport eventually is. (Autio & Kaski 2005, 30.)

6 to 8 year old children are still growing up rather steadily, so there are no high peaks in growth to disturb skill learning. After the age of 8, boys and girls start to differentiate from each other, before this point there are no significant differences between boys and girls.

Even though children aged 6 to 8 years old should control already basic motor skills, according to researches done in the field (e.g. Holopainen 1990), practicing basic motor skills should be continued at school age as well.

When the children reach school age, they generally control the primitive stage of basic motor skills, e.g. catching an item can be even poorer. After the age of 8, the children are able to control the fundamental stage of the skills. There exist a lot of differences between girls and boys, e.g. the stage of throwing and catching a ball. The advanced stage of skills can be reached in some of the skills at the age of 9, e.g. running and bouncing a ball. On the other hand, this advanced level is a necessity for the automatism of the movement, which again precedes the learning of sport specific skills. With this in mind, figure skating practices should also still include drills that develop the basic skills and as good control of their combinations as possible. (Karvinen et al 1991, 100.)

Table 3. Summary of 6-8 year old children as an overall learner (Karvinen, Hiltunen & Jääskeläinen, 1991, 104; Taitokoulukäsikirja, Suomen Palloliitto, 2006.) Modified.

Physical ability	Contents of practices
<ul style="list-style-type: none"> - Control of basic motor skills, e.g. running, jumping, throwing, balance, hanging) - Combinations of motor skills (throwing and catching, running acceleration and throwing) - Development of balance, movement speed, aerobic endurance, muscle power and flexibility - Limited: fine-motor skills, body knowledge (extensions, tension/relaxation) movements that require accuracy and sense of orientation 	<ul style="list-style-type: none"> - Versatile exercise: running, trick tracks, skiing, swimming, nature exercise, ball handling, music - working periods rather short-term - Exercises that increase the body knowledge - Perfect performance should not be expected

Other development	Coaching
<ul style="list-style-type: none"> - Control of everyday routines - Comparison to peers, fear of failure, seeks for approval - Great importance of friends (acceptance) - Importance of role models - Eager, not committed to perseverance - Transition from imagination plays to rule plays 	<ul style="list-style-type: none"> - Coach is the authority - Favor of free formation and simple pair-and group-task forms - Several and variable practices - Demonstration clear and careful, coaching should always be supportive - Clear rules and their obeying; rules can be set together with the children

2.1 6 to 8 year old as a figure skater, “Tintit” - league

A talented figure skaters is light structured, slim and fairly short, and inherently fast. Explosive strength and elasticity of the physical features are emphasized, and this can be seen as brisk and fast skating and feisty jumping. The ability to rotation is an essential part of skill factors. For example, in a Lutz-jump, the figure skater should have the strong awareness of location of hands, hand moves from the front of the body to behind of the body, balance on one foot, gliding and quick tight rotation position. Ability to rhythmisation, ability of balance, movement linking ability and orientation ability are essential coordinative abilities. Figure skating has a high demand of mobility due to many of the movements, so a talented figure skater has naturally mobile joints. All these features are discussed more closely on their own chapters.

According to the Finnish Figure Skating Association’s Rule Book no.20 (1.7.2008-30.6.2010): Children born on 2001 or later are competing in a “Tintit”-league for the season 2009-2010. This is the target group for this thesis as well. Competitions for “Tintit” - league is organized at club-and region level. Each figure skating club has their own music and own program for the children in this group. Usually in competitions, there are many participants, so the children skate their program in pairs, starting from different ends of the ice. Boys and girls usually compete together. The free program should include following movements: single jumps; axel or double jumps are not allowed to try at competitions and 2 spins, which both include 3 rounds. The skating time is no more than 2 minutes. This duration already demands high level of physical readiness and also mental preparedness, e.g. in remembering the program. The first 3 skaters are placed in an order, and rest of the skaters only receives the results and feedback. The skaters are judged by a star-system, which is clear and easy to read for the children. The

results always give positive feedback of the performance and some areas to work on in the future competitions. (Finnish Figure Skating Association, Rule Book 2010, 37.)

There has been constant discussion whether children should specialize in their own sport at an early age or do they have enough time to develop themselves the required skills demanded at top-level at a later age. In any case, there will always be two sides to this discussion, the ones who think early specialization, groups are divided by skill under the age of 13, is the structure for successful career and the others who believe that the foundation should be versatile and should include more than a few different forms of sport, the latest having the meaning of late specialization in a sport. However, in this matter one needs to remember that sports are different in nature and have different types of demands. A career for a figure skater means that they will reach their peak around the age of 20, whereas an ice hockey player might be at the top of his game by the time he turns 30. This means that in figure skating you need to be specialized in the sport at an early age, because the peak is already relatively early compared to many other sports. However with that being said, it is necessary to give the children other sport exercises, such as ball handling, running technique and so on, because they practice so much just sport specific skills even though they are in the critical age of learning other sport skills as well. In the table 4. I have assembled the most important qualities and requirements in 4 areas of figure skating of a 6 to 8 year old figure skater, who is competing in the “Tintit” league.

Table 4. Requirements of a figure skater competing in the “Tintit” league

SINGLE JUMPS (toe loop, loop, salchow, flip, lutz, axel)	
SKILL FACTORS	PHYSICAL QUALITIES
Orientation ability: separate the jumps from each other, comprehend movement tracks e.g. bringing hand from the front to the back, folding hands to the front, checking the rotation - landing the jump	Speed: sharp take off, checking the rotation position
Rhythmisation ability: e.g. timing of the take off + use of hands rhythmically to assist the jump	Strength: take off, controlling middle body in the rotation position, opening the position for the landing curve and holding the position
Balance ability: gliding on the approaching curve, one leg balance, maintaining balance on a changing movement track, regaining balance on landing curve	Mobility: benefits the ability to use large movement tracks (upper body)
Linking movement ability: limbs functioning together (e.g. hands, legs together with body rotation), different directions (e.g. upwards, downwards, sideways), combining take off from a curve - rotation - landing the jump	Endurance: no significant importance, therefore special attention should be given at practices (general endurance)
Agility ability: e.g. jump combinations (quick transfer to the next jump from the previous element)	
SPINS	
SKILL FACTORS	PHYSICAL QUALITIES
Orientation ability: comprehend the spinning direction, spinning movement (e.g. not to move forward, changing direction (starting on the outside curve and change it by turning spinning movement into back inside curve)	Speed: Finding the spinning position quickly from the starting curve -> accelerating spinning speed

Rhythmisation ability: correct timing of knee extension compared to the starting curve, extension of the body after reaching the spinning position	Strength: maintaining good middle body posture in spins and their changes, muscle strength required to maintain the spinning position, e.g. camel spin
Balance ability: maintaining balance on one foot when changing positions, regaining balance quickly after changing spinning leg, maintaining balanced position when flowing out from the spin	Mobility: achieving spinning positions, especially positions demanding flexibility, e.g. cross-grab catch-foot spin
Linking movement ability: Combining direction of the starting curve to the spinning position, combining hands to the movement	Endurance: no significant importance, therefore special attention should be given at practices (general endurance)
Agility ability: spin combinations	
SPIRALS	
SKILL FACTORS	PHYSICAL QUALITIES
Orientation ability: body controls the direction of the spiral, backwards spirals	Speed:
Rhythmisation ability:	Strength: controlling the middle body, maintaining position during the spiral
Balance ability: gliding on one foot while raising the free leg, maintaining balance during the spiral and when moving to the position	Mobility: Spirals requiring flexibility, e.g. Biellman spiral
Linking movement ability: combining hands to the spirals	Endurance:
Agility ability:	
STEP SEQUENCES / BASIC SKATING	
SKILL FACTORS	PHYSICAL QUALITIES
Orientation ability: very important factor; performing the steps with correct foot, correct direction, and correct curve. Changes of rotational direction, comprehending the length of each curve -> crossing the midline of the body!	Speed: tempo in the steps, in the turns, when changing the foot, in weight transfers etc. Maintaining speed in the step sequences.

Rhythmisation ability: correct timing of weight transfer, tempo of the steps	Strength: controlling the middle body and hand posture, producing power at legs (e.g. hamstrings)
Balance ability: changes of direction performed with one foot, weight transferring from one leg to another, maintaining balance during changes of direction	Mobility: posture of the hip area (e.g. gluteal group) stays upright when mobility at the hip area is in order.
Linking movement ability: different steps and elements are combined smoothly into a whole, step sequences, combining hands into steps	Endurance: basic endurance to endure e.g. the 2 min competition program
Agility ability: quick feet movements, alternating the tempo in steps	

2.2. Versatility in sport training

The reason why children come to the organized sport practices is to move and have fun with friends. Practices should include a lot of action, and guarantee as much efficient exercise to every child as possible. During children's practices one sees all too often too much talking and standing waiting for own turn. The doctor-coach Harri Hakkarainen summarizes versatility in the developing basic physical qualities point of view as follows: "Versatility means that we get winded during a week, we have muscle condition practices, basic skill practicing, sport-specific technique training, practicing that loads the bones and other supporting organs during a week. Thus the target is to stress the body in the most versatile way possible". (Nuori Suomi 2009, 11.)

Before the end of childhood, it would be recommended that children have the possibility to practice some other sports in addition to their main sport, e.g. figure skating. Practicing a variety of sports is beneficial for broadening the general motor skills and basic physical qualities. A good combination of sports will surely complement each other, e.g. figure skating, athletics and tennis is a recommended combination whereas combining three similar ball games or three endurance sports. Table 5. represents the differences between versatile practicing and one-sided practicing. The important thing that coaches should remember is to ensure that children really enjoy practicing the sport. Thus would be good that figure skaters practiced

other sports to make sure that they do not get bored and realize later on that figure skating is the only sport they know how to practice, and do not possess other sport skills.

Table 5. Examples of versatile and one-sided sport practicing (Nuori Suomi ry 2009, 9)

Versatile practicing	One-sided practicing
Develops best basic motor skills and sport-specific skills	One-sided movement limit children's development possibilities
Guarantees favorable development of circulation system, structure of bones, muscles and nervous system	Can lead to uneven development of organism's function ability
Stresses the whole organism and supports balanced development	Can lead to strain injuries and hinder the development at a later age
Practicing is fun and inspires the child to move and exercise	Will become boring and child has no eagerness to come to the practices

3 The organ system of 6-8 year old children

Versatile exercise and sports support the development of human organism. All organs should be stressed in a versatile way in all growth periods and in a correct manner reflected to a certain growth period. Fast periods of development are called sensitive periods, when with correct training it is possible to develop efficiently an organ system that is in a powerful developing stage (UKK-Institute).

Nervous system is one of the fastest developing of the entire organism, which especially means the sensitive periods in agility, motion velocity and balance. Basic gymnastic skills and exercises done with own body weight also develop power qualities appropriate to the age period.

Different organs follow their own timeline of development and growth and this information is used in recommendations for childhood practicing. Physiologist Scammon has best described the development of main organism. The diagrams are from the 1930-century, but they still hold true. This has been studied in the following chapter.

3.1 The relative growth and maturity of main organ system

The purpose of the Scammon figure (figure 2.1.) is to describe the normal growth of main organism in calendar years. The growth of musculoskeletal system, internal organs, cardio - and circulatory system, digestive system and excretion of urine are indicated in the general growth curve. The growth of the size of brains, central nervous system and its supporting structures are shown in the nervous system curve. Primary and tangential genitalia and their mean growth are noticed in the reproductive system curve. Immune system curve, composed of e.g. lymph glands, tonsil and adenoid and other lymphoid tissues, indicates that they mature rapidly during growth period and their size becomes smaller during puberty, although functions still remaining the same. (Hakkarainen et al 2009,75.)

“Scammon figure is a good aiding tool for youth coaching, because it helps to make conclusions at which stage the main organs associated to training physical features develop the fastest” (Hakkarainen et al, 2009 75).

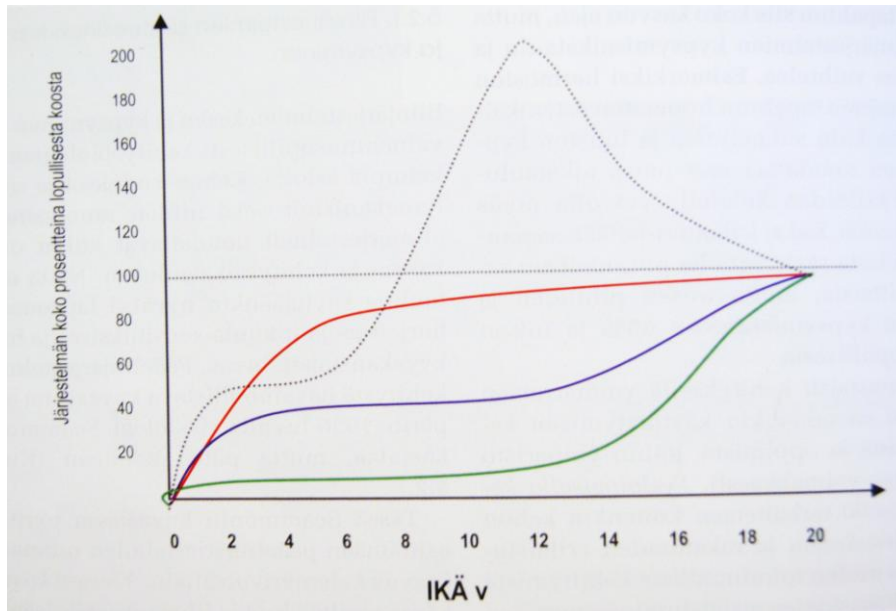


Figure 1. The figure expresses the growth of main organ systems by calendar year (x-axis) indicated by percents from the final development stage (y-axis). Red line is for nervous system, blue is for general growth, green is for reproductive areas and grey broken line describes the immune system. (Adaptation; Scammon, R.E., 1930).

Coaches working with children or young athletes should keep the versatile developing of main organ systems as their common thread. Fast development periods are called sensitive periods when a specific organism is in a strong period of developing and can be effectively developed with appropriate exercises. Organism can be roughly divided into four main categories; nervous system, muscles, locomotor system (bones, tendons, ligaments), respiratory -and circulation together with metabolism. Ways to practice each organ system will be handled later on in its own chapter.

When coaches have understood the meaning of organ system and especially developing them and thinking of versatility through these systems, it is easy to create a versatile and long-term practice plan for any sport. When there is a well-analyzed sport analysis on the background, coaches are able to add other practices loading the organ systems.

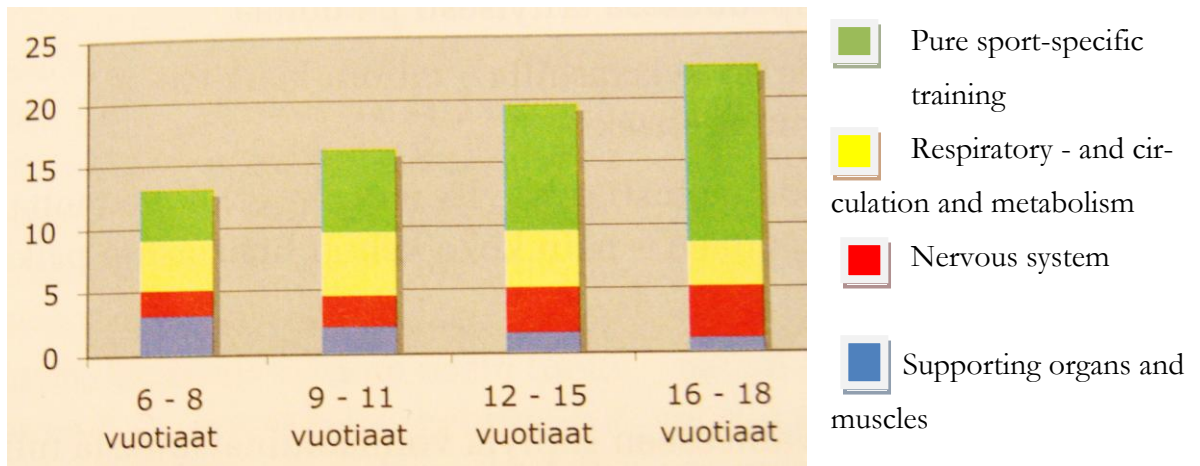


Figure 2. A long-term plan based on the organ system development in skill sports. In the figure x-axis represents age in calendar years and y-axis exercise -and practice hours per week. The proportions of the balks represent how training of the organ systems can be emphasized in different age categories. This figure is an example of a skill sport (in this case, figure skating). (Hakkarainen et al. 2009, 145.)

The figure 2. indicates the organ system approach, a theoretical example, of a versatile and long-term practice plan for a skill sport, in this case figure skating. Each organ system should be stressed equally before teenage and as the athletes grow up, training becomes more sport-specific oriented (figure 2). Sport-specific means in this context pure sport specific training and training aiming to develop demanded qualities by the sport. The presentations of the figure 2. are not absolute and there can be differences inside different skill sports. The figure does not take into consideration the addition in exercise brought by recreational exercise, e.g. going to school, to friends etc. The relation between different parts of the bar chart describes how different organ systems can be stressed in different age stages and this guarantees versatile development of organ systems. As seen in the figure 2, the main emphasis with 6 to 8 year old children should be stressing the nervous system and respiratory and circulation systems, instead of stressing sport specific training. Versatility increases by itself when collaborating with other sport clubs or practicing different types of sports, but it is possible to reach same results inside one specific sport. By practicing in a versatile way and considering age stages inside one sport, health benefits and future of top athletes are secured. As the figure 2 presents, practices should stress all four main categories in a week; respiratory and circulation and metabolism, supporting organs (bones and muscles), nervous system (balance, agility and speed) and sport-specific training. (Hakkarainen et al. 2009, 144.)

As figure skating is strongly a skill specific sport, the amount of sport specific needs to be emphasized already with child athletes. It is not accurate to say that these child athletes should have LESS sport specific training; on the contrary it needs a lot of focus. In my opinion, the other categories need to be trained to support the sport specific training, and therefore the amount of hours spent to practice these qualities need to increase. It is evident that to be able to teach sport specific qualities, other qualities need to at a required level to have results. Once again, children develop individually and therefore there can be huge differences amongst the 6 to 8 year old children, so by developing the organ system as a whole can create balance in the children's skill level.

3.1.1 Development and growth of nervous system

According to current studies it has been stated that once a human fetus is six months old, it has produced all of human body's nerve cells, and new nerve cells will not be produced after this. The growth of nervous system depends on the procreation of the size of the cells, myelination, and the growth of surrounding supporting cell membranes. After its formation, the nerve cell can increase its mass up to over 200 000 - times. A versatile sense-and motion stimulus contributes to the nervous alterations, lack in stimulus has the contrary effect.

Around the age of 5 to 6 year old children, the nervous system has developed approximately 80 - 90 % of the size of an adult. From 12 year old onwards the development of nervous system is much slower than the rest of the organism (Mero, Nummela, Keskinen & Häkkinen, 2007, 21). Taking this fact into consideration, versatile motor stimulus (skill, balance, agility and so on) should be highly stressed in the childhood training up to the adolescents, although it is important to continue develop and maintain these qualities (Hakkarainen et al. 2009, 91). During the first ten years in life skill practicing should be stressed, because the early maturity of nervous system enables coordinative abilities and skill practicing (Mero et al 2007, 22).

3.1.2 Development and growth of muscular system

The quantity of muscle cells is well genetically inherited characteristic, and there seems to be no significant increase in muscle cells after birth (Riedel 1874, Morpurgo 1897, MacCallum 1898), whereas the mass of the cell increases by the procreation of functional structures of the cell. Muscle fibers grow longitude and latitude by age. The muscle tissue increases its volume in response to the increase in training, meaning that hypertrophy occurs in the muscle cells. The muscle reaches its natural adult size around puberty, with girls at the age of 10 and with boys at the age of 14. Girls experience the puberty stage and other hormonal changes before

their peer boys. These growth hormones have a significant input on the growth of the muscles, so training aiming for the growth of muscle cells is not very effective before the increase in hormonal production associated to puberty.

Skeletal muscle fibers can be divided into following main groups; Type I, which are slow fatigue and slow twitch, they can carry more oxygen and by being able to sustain aerobic activity they are suited for endurance sports and by generating ATP they are slow to fatigue. Type II muscle fibers are fast twitch and fast fatigue being efficient in short bursts of speed and power, on the other hand being quicker to fatigue.

Genes have great influence which type of muscle cells the person has, but it is more accurate to say that we inherit the potential to have either one as a stronger feature. The practice stimulus at childhood gives the ultimate effect on the muscle types. Especially the intermediate muscle cells can transform into either fast or enduring direction depending on the training stimulus during the age of 4 to 8. According to current conception, the qualities (fast-or enduring-) of muscle cells are not determined finally at early childhood, but can be developed with versatile exercise throughout growth. However, the potential influence will decrease approaching puberty.

3.1.3 Development and growth of skeletal system, tendons, cartilage and ligaments

Bones of the skeletal system create a framework to which the softer tissues and organs of the body are attached, and the skeletal system also has the role of protecting vital organs, e.g. the heart and lungs. All human body movement is a result of interaction of the muscular and skeletal systems. Often they are discussed as a together unit; musculoskeletal system. Tendons connect the muscles into bones, and bones are connected to each other by ligaments. In places of human body where bones meet, e.g. elbow is called a joint. Cartilage is a stiff but flexible connective tissue found in the joints as well as in many other areas of the human body.

The growth of human bones and its schedule is strongly genetic. Before puberty, at this case with children aged 6-8 year old, the increase in bone density is most effective, so the bone density and tolerance should be strengthened through increased stress. Already at early childhood, practices effect on the strength of tendons and sensation system. Especially good practices are different jumps and running which stress the bone structure longitudinally, whereas e.g. swimming does not give stress to big bones of the leg. Stressing the bones has important influences throughout a human's life. (Mero at al., 2007, 24.)

Tendons and ligaments are involved in the generation of power by stretching according to the movement and after the movement recovering to its length at rest, resulting in restoring elastic energy and releasing it at the muscle contraction followed by the stretching.

The elastic energy increases movement speed and influences on the economy of the exercise. The versatile stressing in childhood also develops the sensitivity of sense organs (receptors), which sense movement and its changes in the tendons and ligaments, and thus develops sense of balance and motoric skills.

3.1.4 Development and growth of respiratory - and circulatory system

The basic structure of lungs with its bronchus and branches are ready at birth, but structural size, ability to function and ability to exchange gas (oxygen and carbon dioxide) alter throughout all growth (Hakkarainen et al. 2009, 97).

During the growth of the upper body, the structural length and depth wise measure of the lungs changes. During the first 8 years of life, the amount of pulmonary alveolus increases from approximately 20 million to approximately 300 million. At birth, the surface area of gas exchange of pulmonary alveolus is approximately 2,5square metres and by the age of 8 the surface area increases up to 32 square metres. In addition to the above mentioned, also the elasticity of the supporting structures of the lungs increases during growth, and this enables more effective exhalation. All these factors together lead to intensification of different lung functions, e.g. inhaling oxygen and ability to remove carbon dioxide.

Although it is very rare that factors associated to breathing or lung functioning is a limiting factor in children exercise, but a maximal and intense training developing these factors should be thought carefully; there can occur situations e.g. deficit of oxygen in artery blood caused by maximal stress.

4 Sensitive periods

Physical developments of human being occur in a logical order and this fact should be taken into consideration in children and youth practices. Sensitive periods are the “golden time” for a certain skill when the human being is most receptive for that specific skill. Sensitive periods should be paid attention to and utilised in a long-term planning, not to neglect them in team or individual sport practices. At the same time, sensitive periods are only outlines for practices and when planning practices, individual development of children should always be taken into great consideration as well as the child’s exercise background.

Especially in skill sports, the child should be trained according to his / her individual level and have the optimal practice stimulus for that current sensitive period. Practicing a skill should be initiated as early in the childhood as possible. A good skill foundation is an antecedent in later life when the motor skills have been improved. Developing a skill is easiest before the peak in height growth.

Central nervous system development creates the antecedents for the motor coordination development. Nervous system develops in its final stage at preschool age, so at this age stage the fine motor skills and coordination ability develop in a rapid pace. Unless the coordination skill training has not been given enough attention in practices it will unfortunately show later on in life, e.g. poor coordination ability and it has detrimental impact on learning sport specific skills. “Developing coordination skills is possible notably earlier than developing physical attributes” (Forsman & Lampinen, 2008, 41-42).

Table 1 indicates the primary emphasis of physical training in different age groups. As it can be seen on the table, 6 to 8 year old children practices should include e.g. lot of balance and mobility practices, as they have been studied to have great potential of developing at this age period. There should also be preparative training for speed, speed power and aerobic endurance in childhood, even though these sensitive periods come up later in life. Practice examples: short - and long-term -, versatile - and play like skill training. There should be a lot of balance-, agility - and speed training in childhood, as these become more difficult later on in life. On the other, all maximum power exercises and training that are highly lactic should be avoided.

Table 6. Sensitive periods for physical qualities in different age groups. Table also shows periods of practicing the quality, and preparing periods for that quality, and periods when quality should not be trained.

(Modified, Taitoalmenus, Pertti Helin)

Physical qualities	6 to 8 years	8 to 12 years	12 to 14 years	14 to 18 years	18 to 20 years
BALANCE AGILITY	sensitive	period	practice	practice	practice
SKILL LEARNING (e.g. general motor skills, sport-specific skills)	sensitive	period	practice	practice	practice
MOBILITY (elasticity)	sensitive period	practice	practice	practice	practice
COORDINATION (e.g. eye-hand, hand-foot)	practice	sensitive period	practice	practice	practice
SPEED (e.g. different directions and stimulus)	preparing	practice	sensitive period	practice	practice
ELASTICITY (e.g. jumps and leaps)	preparing	practice	sensitive	period	-----
SPEED POWER (explosive)	preparing	practice	practice	sensitive period	practice
MAXIMUM POWER (maximum effort)	NO!	NO!	preparing	practice	sensitive period
BASIC ENDURANCE	preparing	preparing	practice	sensitive	period
ANAEROBIC ENDURANCE (lactic)	NO!	preparing	preparing	practice	sensitive period
MUSCLE ENDURANCE (basic muscular system)	preparing	practice	practice	practice	practice

4.1. Skill sensitive period

“Motoric development refers to a process, a constant modification, during which a child embraces physical skills” (Hakkarainen et al. 2009, 140). Changes in the child’s motoric development occur according to a certain order determined by genetics, but there are researches indicating that skill sensitive periods purely defined by genetics do not exist to the same extent as they have been registered by physical factors, in comparison the those factors skill learning is far more complex and larger phenomena, because there are always a learner, the task to learn and learning environment in interaction. This also indicates that stimulus from the child’s both social and physical surrounding are very fundamental factors in skill learning. Researches do not show significant sensitive periods for skill factors, rather just fast spurs of development of some qualities. (Hakkarainen et al. 2009, 140-141, 239-240.)

The learning period of basic motor skills; balance-, equipment control-, and movement skills, occurs on average from the early second year of life to the end of the seventh year, consequently the child learns most of the basic motor skills before reaching school age. After this stage the child moves up to a stage of specialized movements, which begins on average during the seventh year of life. The ability to learn these skills, especially specified sport skills, requires control of the previous basic movements. It is worth noticing that even though a child at the age of seven has not yet gained a basic level of motoric skills and is not yet in control of these movements, it is still perfectly possible to reach the level at later age. Figure skating is an extremely demanding sport, and generally it is expected that the children are in control of these skills already at a very early age. Once again, it should be remembered that children are individual and therefore development might take more time with some children, not making them feel any less talented or having less possibilities to succeed in the sport. Skill is a very slowly established feature and it takes years of work to develop, therefore teaching skill needs long-term planning. (Hakkarainen et al. 2009, 141.) The purpose of versatile practices and by developing other features of the child, aim is to make the skill learning as efficient and productive as possible.

4.2. Speed sensitive period

Speed is one of the most difficult physical qualities to develop; researches state that speed is strongly genetic feature and no real influence can be achieved through training and thus it is easiest at a very early stage of childhood. (Miettinen 1999, 199.) On the other hand, when looking at the features affecting speed and its development, it can be realized that speed can be developed, although it does include potential challenges, e.g. realization of basic principles

of progressive coaching. Usually, there's a general conception that the child should move faster than before to give the body a development stimulus, although this is certainly not always the case; moreover, by developing the different elements of speed independently, self the quality can be developed. When different elements and physical development are measured together, certain fast developing stages of elements affecting growth and development can be defined. In general, as the base work for developing coordination is also done in childhood, it is evident that training speed is essential in childhood. Lack or mistakes in training speed for children is difficult to replace in adulthood. (Miettinen 1999, 199.)

As already mentioned before, speed is a feature that is mainly inherited, but on the other hand it can be developed when started at an early age and by utilizing the sensitive periods in planning the practices. With children the main emphasis should be on practicing and developing the requisites of speed early enough in the child's development. The nervous system and the skill qualities of the child which role is to make the demands of the nervous system meaningful develop during the first ten years of life. (Miettinen 1999, 59.) The requisites which strongly affect to speed are nervation (movement frequency, reactivity, rhythmisation ability) and skill as well as level of power. Development of all the other features, besides power, is dependent on the function ability of the nervous system and therefore these features should be trained with emphasis before puberty (Table 1). Table 1 also shows that power training is a continuum for development of speed at puberty and afterwards, but should not be started before the actual sensitive period of power. All in all, with children the emphasis should be on nervation and skill, because after puberty developing these features becomes increasingly more demanding and somewhat also impossible. (Hakkarainen et al. 2009, 141 & 219.)

4.3. Strength sensitive period

Strength is one of the qualities that affect the performance; lack in strength in any part of the body weakens the performance, especially in skill-demanding sports such as figure skating. (Miettinen 1999, 59) As already investigated with skill and speed sensitive periods, versatile development of nervous system creates a base for later strength development, as the source of generating strength at muscles is mainly dependent on the nervation ability of the muscle fibers. In addition, developing of bones, tendons and other supporting organs have a significant role. In childhood practices should develop the regulation ability of nervous system, e.g. muscle coordination practices and learning the strength training techniques, which makes it easier to develop more muscle mass at puberty. (Hakkarainen et al. 2009, 206-209.)

In addition to nervousness, strength training at this age (6 to 8 year old children) should emphasize muscle condition and especially the aerobic endurance of muscles, and this type of training should be focused on the mid section of the body, as control of this area is an absolute requirement for later heavy strength training. Also to improve and develop the recovering abilities of the muscle, durations should stay rather short to minimize the production of lactic acids. (Hakkarainen et al. 2009, 142.)

Research results indicate that puberty is not a sensitive period for the practice effects of strength training, on the contrary, strength training can be executed already with young children, but the methods need to be appropriate to the development stage.

4.4. Endurance sensitive period

The organism of the child is adaptable for aerobic stress already at an early stage. The factors essential for endurance develop at an early stage, if the organism is given enough stimulus and aerobic stress. Childhood endurance practices create a base for adulthood in any given sport. The heart's ability to function develops steadily until puberty, and this mainly happens through the strengthening of heart muscle cells, and the development of the heart displacement. Also for developing endurance, essential factors are density of capillaries, amount of aerobic enzymes, lungs ability to function etc, and these qualities develop already at an early childhood, although once again; they can only develop if given enough stimulus for aerobic stress.

The child's body is adaptable to function and recover effectively from performances of 10 seconds duration, but the child's ability of lactic acid metabolism and the ability to remove lactic acid are inadequate. Therefore, speed endurance practices should be free of producing lactic acid in childhood (keeping working periods intensive and duration of 15 seconds, recoveries lasting 20 - 60 seconds). This type of training is already included in all kinds of games and plays, and therefore the lactic acid produced should not be intimidating, rather just acknowledging that too heavy lactic acid training at a too early development stage can be even detrimental to development of other qualities. (Hakkarainen et al. 2009, 142, 279-287.)

4.5. Mobility sensitive period

Mobility sensitive period should also be taken into consideration in childhood training, as it has a positive influence on generating power, relaxed performance, endurance and speed. Mobility can be understood in various ways, there can be e.g. passive or active mobility. The first one means mobility of joints caused by an outside force, the second one, active mobility, has a more significant role in sports as the movement extent is achieved by own muscles during a movement. Both passive and active mobility training should be included in the practice plan on a daily basis. The mobility training should be initiated at early childhood, and amount of practices should be increased steadily to obtain the maximal level of mobility (especially passive) at the age of 11-14, as this stage is a sensitive period in mobility training. Children have naturally flexible joints, and therefore the obtained mobility achieved in childhood should be remained in later age periods and process it to an active mobility demanded by the sport.

5 Learning a skill

A skill can be defined as goal-oriented and learned function. Learning a skill differs from reflexes; a skill is goal-directed and voluntary reaction. It also differs from basic motor skills, e.g. walking, jumping and throwing, these movements are not learned, but their accomplishment is a result of maturity and become trained. Skill is a series of organized functions; fundamental movements are combined produces a motoric skill. This type of functioning is skill learning, which is determined by ability to link movements and other skill factors. Skills can be divided into two categories; fine motor - and comprehensive motor skills. In figure skating, one needs both skills, as the comprehensive motor skills require functioning of big muscle groups and fine motor skills demand accurate nerve-muscle control, e.g. skilful hand movements. Learning a skill requires lot of repetitions, e.g. in figure skating it requires numerous repetitions to succeed in e.g. axel-jump. Research done in this field, indicate that skill learning can be affected somewhat with genes and surrounding, but there is no clear evidence that these factors have direct commentary on skill learning ability. Children are individuals so there are a lot of different factors affecting the child's ability to learn a skill, and children should not be evaluated by their talents, abilities or physical qualities. The child, once given the best possible frames, can compensate deficiencies with other features or with high quality practicing. (Eskola & Suoranta 1995, 24-33; Hakkarainen et al 2009, 239-243.)

5.1 Skill factors

Skill factors consist of balance, rhythmisation ability, and quick reaction ability, sense of orientation ability, resolution ability and linking movement ability. "Skill factors are meaningful cooperation between senses, nervous system and muscle system" (Miettinen 1999, 57).

Balance

Balance is an attribute that is mostly learned in early childhood, before school-age. Maintaining good balance requires activation of certain muscles and utilisation of feedback received through senses, as well as resisting gravity. Skill development requires learning, which happens with great amount of repetitions. Balance skills can be divided into static, in other words movements that are stationary, and dynamic, that is movements moving from one place to another and these skills develop in this order. As the child's motor skills develop, lot of the static skills can become dynamic skills. (Numminen 2005, 115.)

The growth of a child requires further development and new regulation of balance. The sustenance of different body positions is good practice for balance, for example standing on toes,

standing on one foot, head-standing. It is also good to implement balance skills into movement, for example walking backwards or on toes, one-legged jumping, and different types of spinning movements (balance after spinning). Also to add difficulty into practicing balance, equipment can be added, for example walking with a beanbag on top of the head, spinning a hoop, and by adding an equipment control to a simple movement (Karvinen et al. 1991, 101). Balance ability is one of the most important abilities in figure skating. There are a lot of movements and their combinations in figure skating where the body movement is combined into a spinning movement or gliding movement.

Rhythmisation ability

Rhythm ability can be developed in many ways. Different games and plays can be used with children, for example finding a rhythm in music by clapping or moving, or using songs to give rhythm to a movement. Alterations in the intensity of the movement can be practiced using different visions that make the child move powerfully or light. Variations in velocity, pace, can be taught by moving in different speed, accelerating and slowing down (Karvinen et al. 1991, 101). Rhythmisation ability is dependent on the structure of nervous system and ability to function, so enforcing it at practices in childhood is recommended. At this time the natural development of nervous system is most powerful. Many children, who are musically talented, usually possess good rhythmisation ability, so using a lot of music at practices strengthen the developing of these qualities. In figure skating, music is an essential part of the sport, so it is naturally a part of many practices, and children are demanded to learn to listen to the music and its rhythm already at an early age. Rhythmisation ability is very important in figure skating, as the child must know how to express the music and combine it with movements into a whole performance. The figure skater expresses herself and her movements with the rhythm and tempo of the music.

Quick reaction ability

Ability to start a certain movement from a sign, such as a child needs to react to a certain vision-, hearing-, or feeling stimulation as quickly as possible. This skill practice can be complicated by changing the reaction to different stimulations. In figure skating, the athletes react on music or body positions and overall in joint movements and changes in muscle length. There are different structural levels to reaction ability; significant being sense organs, e.g. ears, eyes, and muscle senses, areas dealing with information received from the sense organs situated in the brain, and motoric nerves transporting message to the muscles and of course, muscles. (Hakkarainen et al. 2009, 222.) In figure skating, in practices the movements have been tried to automatize into an invariable performance together with music, so therefore reaction ability

in normal situations does not play a significant role. Sudden situations can occur in e.g. competitions when a music player does not work, or the skater forgets the program, and then the child needs quick reaction ability.

The way to practice this ability is to enhance the ability to react to the information received from the senses. Training reaction ability is most effective at childhood, although it can be developed throughout life. The practice effect is very specific; the more one practices a specific external stimulus, the more effective they will react to that stimulus.

The sense of orientation ability

Practicing for orientation ability includes conceptualization of use of personal or general space. Also practices of different formations (line, row, curve, circle,) moving in different levels (low, high) and movement to different directions (forward, backwards, up and down, side to side) develop this ability. Orientation ability also includes practicing of spinning movements, which is very important in figure skating.

Resolution ability

Resolution ability indicates the ability to sense the body movements, variations in producing muscle power (working periods - relaxation) and the ability to perform the movements accurately and economically (Mero & Numminen 1990). Resolution ability is also based on the ability to regulate strength, space and use of time. Practicing improves coordination and fluency and results in more economical movements. Figure skating demands pure, aesthetic and effortless performance, which can be obtained by detailed technique and therefore economical movements.

Linking movement ability

Linking movement ability indicates the ability to combine movements into fluctuating combination (Mero & Numminen 1990). This ability is very essential in figure skating, as the purpose is to create a beautiful combination of different movements. Nowadays, the new judging system emphasizes even more on the movement combinations, all elements need to be combined together in a smooth yet demanding way, e.g. combining steps before a jump.

6. Research methods and data collection

In the following chapters we shall delve into the research method of this thesis, go through the characteristics of the research and the course of the research.

6.1. Steps and results

This research is a so-called qualitative research, as it investigates individuals, not mass groups. In a qualitative research, individual answers of the respondent are emphasized, whereas a quantitative research is suitable for measuring quantitative information. Qualitative research investigates especially the “why” of decision making, so smaller but focused samples are needed. Due to this fact, the respondents have been elected beforehand. Qualitative research doesn't just rely on statistics or numbers, which are the area of quantitative research. Qualitative research is used to gather insight into people's attitudes, behaviours, motivations or lifestyles. The purpose of this study is to gain generalized conclusions and in this case answers to the following question “How is versatility in training taken into consideration in figure skating clubs around Finland?” Answers for the questions are being sought from the coaches working for figure skating clubs under the Finland Figure Skating Association. (Hirsjärvi, S., Remes, P. & Sajavaara, P. 2005, 130,131)

The strength of a qualitative research is its ability to provide descriptions of how people experience a given research issue, it gives us an insight of the human side of the issue, sometimes the contradictory behaviours and opinions of individuals. One of the most common qualitative methods is to use focus groups; they are effective in generating broad overviews of issues of concern to the cultural groups or subgroups presented in this study. The primary method of this research was to use a questionnaire.

6.2. Data collection and handling

When initiating the project, I acquired a list from all the figure skating coaches in Finland from the website of Finnish Figure Skating Association. This list is an open register on their website and the contact details are there for anyone to take contact to the responsible coaches in the clubs. The list contacted consisted of 56 coaches, and the sampling area is nationwide. In the covering note, I requested the recipient to forward the message and the questionnaire to the coach who is responsible of the examinee group, which is the children aged 6 to 8. I did not eliminate any figure skating club from the original list, I wanted to receive answers from every type of organizations, big or small, successful or not.

After gathering the contact information list of each organization for my research, I sent them the questionnaire along with a covering letter informing them about my project. In this letter, I introduced the project, gave them background information and the objectives for this project. I also urged them to take part in this, saying the results will become in everybody's use.

The questionnaire (APPENDIX 1) and the covering letter (APPENDIX 2) were compiled in cooperation with the Head Coach of figure skating in Lahti, Henna Hietala, and the chairman of Lahti Figure Skating, Virpi Hurri. They took part by offering ideas and current concerns to the questionnaire. After the questionnaire was finalized, it was sent to all the clubs in the list in the beginning of March 2010.

By the beginning of April, I had received only 7 answers to my request. I had sent a reminder for all the clubs one week before the deadline to ensure that the ones who had not yet answered they could still do so. Still, the amount of respondents was far smaller than I had expected. Still, I decided to make some conclusions from the answers received. I started to go through the answers in the beginning of April 2010. There was no correspondence with the respondents after this, so any misconceptions made could no longer be avoided.

6.3. Results

6.3.1. Background information

The questionnaire was sent to 56 figure skating organizations under the Finnish Figure Skating Association, but most of these organizations did not respond to the questionnaire. All in all, I received 7 answers to the questionnaire.

Reasons for this small amount of respondents are discussed at the conclusion chapter 5.4.

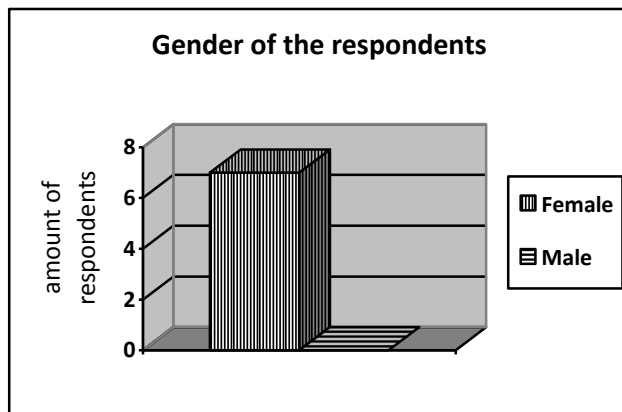


FIGURE 1. Gender of the respondents (n=7)

The gender of the respondents was heterogenic. All the respondents (n=7) were female as shown in FIGURE 1. I had hoped in the beginning of this research to receive a response from a male perspective as well, but as the amount of male coaches in figure skating in our country is rather small, this result was expected. The reason why I wanted to gain male perspective was to see if there are any differences in answers between genders.

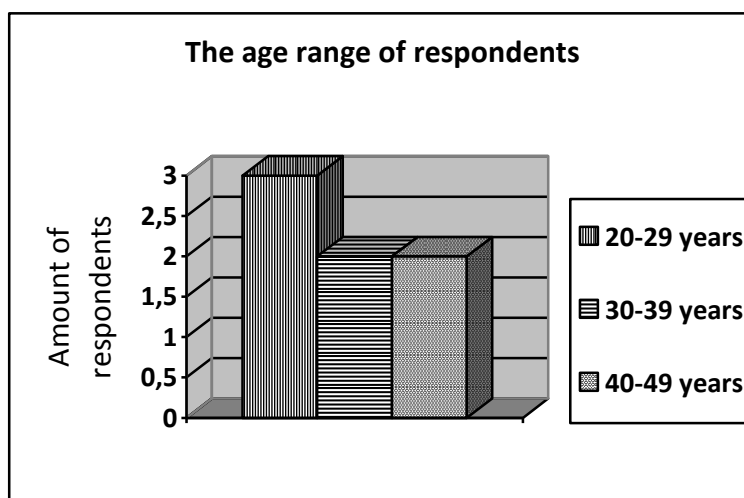


FIGURE 2. The age range of respondents (n=7)

The age ration of the respondents was between 20 years to 44 years old. The FIGURE 2 shows that three of the respondents were between the ages of 20 to 29; two of the respondents were between the ages of 30 to 39 years old; and two of the respondents were between the ages 40 to 49 years old. As the target group of the questionnaire were the children aged 6 to 8 years old, it was the assumption that many of the coaches are under the age of 30. Many of the figure skating coaches working especially with the young children are mainly young adults themselves, most of them have finished their own active figure skating career some years ago, and continue their work now as a coach.

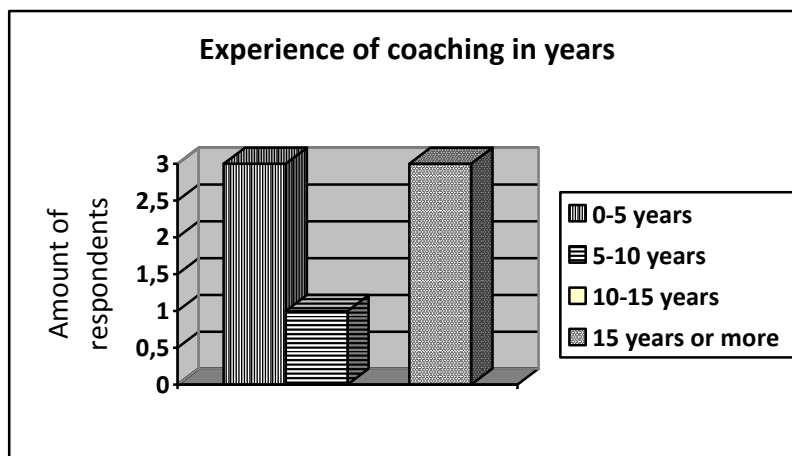


FIGURE 3. The experience of figure skating coaching in years (n=7)

As already seen on the FIGURE 2, most of the respondents were young adults, mainly around 20 years old. Due to this, it is no surprise that most of the respondents have been coaching less than 5 years. The group of 6 to 8 year olds are usually the first figure skating group coaches start their career from. Three of the respondents had been coaching less than 5 years, most of them 2 years. Interestingly enough, there were also coaches from the other end of the scale. From the respondents, there were 3 coaches who have been coaching more than 15 years (FIGURE 3.) It does not become evident in the questionnaire whether these coaches are the head coaches of the organization or what their status is. Nevertheless, it is interesting to gain perspective from their point of view as well, as they have a lot of experience and knowledge from different methods of coaching. One coach had been coaching more than 5 years; no coaches were on the range between 10 to 15 years of coaching (FIGURE 3.)

In the questionnaire the coaches were able to inform voluntarily their current organization. One respondent did not give details of her current employer. No responds came from the capital area, or from the northern parts of Finland. One respondent works at two different

figure skating clubs at the same time (Keupa HT and JäTL). All the figure skating organizations represented in this research are listed below:

- Varala-Tiimi ry, Tampere
- Joensuun Kataja ry, JoKa, Joensuu
- KeuPa Hockey Team, Keupa HT, Keuruu
- Koo-Vee ry - Taitoluistelujaosto, Koo-Vee, Tampere
- Jämsän Taitoluistelijat ry, JäTL, Jämsä
- Turun Riennon Taitoluistelu ry, TRT, Turku
- Mäntsälän Jää-Tiikerit ry Taitoluistelujaosto, MJT, Mäntsälä

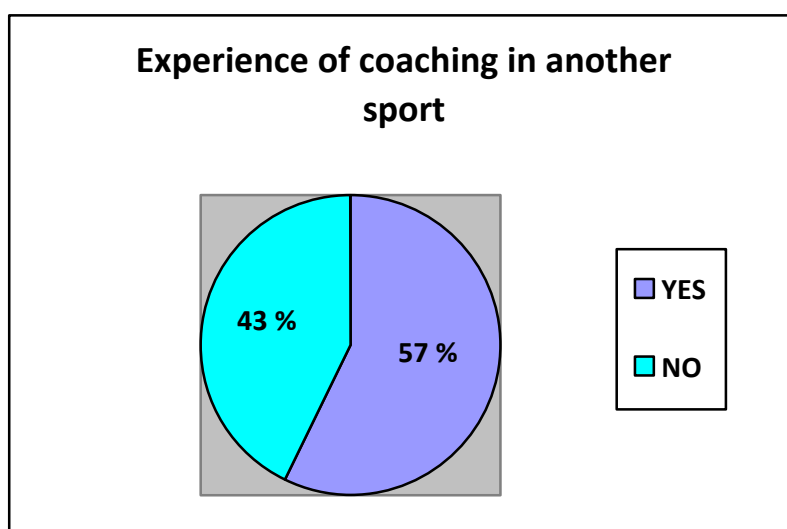


FIGURE 4. The experience of coaching in another sport (n=7)

The FIGURE 4 represents percentage of coaches' experience of coaching amongst other sports. 57% of the respondents have been or are currently coaching another sport alongside figure skating. 43 % of the respondents have not coached or did not inform of any experience in other sports. Respondents informed following sports as their experience:

- Athletics
- Figure skating school
- Gymnastics for one year
- Children sport camps
- Swimming
- Children sport schools 5 -10 years of experience

All the listed activities are supportive practices also for figure skaters, e.g. athletics gives great support in developing speed, agility and coordination abilities, as well as developing organ systems.

6.3.2. Other sport training offered by the figure skating club

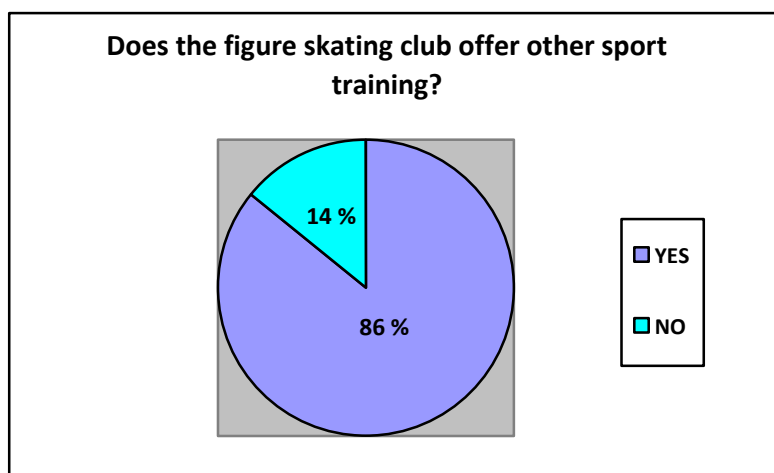


FIGURE 5. Other sport training offered by the figure skating club (n=7)

FIGURE 5 shows that 86 % of the respondent's organizations offer other sport training as a support for sport-specific figure skating training. One respondent (14%) informed that their organization does not offer other sport training for their figure skaters aged 6 to 8 years old. The respondents, who answered affirmatively, informed mainly that they offer 1 hour per week other sport training. Two respondents informed that they offer other sport training 1-2 hours per week. These variations between organizations can be also seen in results in FIGURE 7 "Amount of practices".

Figure skating organisations in this research informed following other sports included in their practice plan:

- Dance
- Gymnastics
- Dance
- Physiotherapist
- Ballet
- Dance
- Pilates (small part of the children take part in this)

As can be seen, dance is strongly a part of many figure skating clubs' practice plan. Dance should absolutely be included in every organization already with children this age. As well as it develops their physical features and their organ systems, it also develops their rhythmisation ability, ability to express themselves and their creativity. The results are surprisingly limited in this sense that they are very few sports mentioned, and only one organization informed that ballet is a part of their practice plan. In my opinion, ballet should be on the practice list for 6 to 8 year old children, either together with dance or separately. Interesting fact is that one respondent informed that they enjoy the use of a physiotherapist, who is responsible of the muscle care of the skaters. It is good that children already have muscle care introduced to their practice plan as well, as they will understand the importance of muscle care already at an early stage. In relation to this, one organization offers also Pilates teaching. This is not automatically offered to all the 6 to 8 year old children, but for those who practice with older children. Anyhow, this type of practicing is excellent to start at an early stage as well, as long as it is done accordingly to their development stage. The same organization also has a package of 10 times practices for a season; they work in cooperation with an athletic club, cycling club and orienteering. More of the importance of cooperating with own local sport organizations is handled in the conclusions chapter at the end of this research.

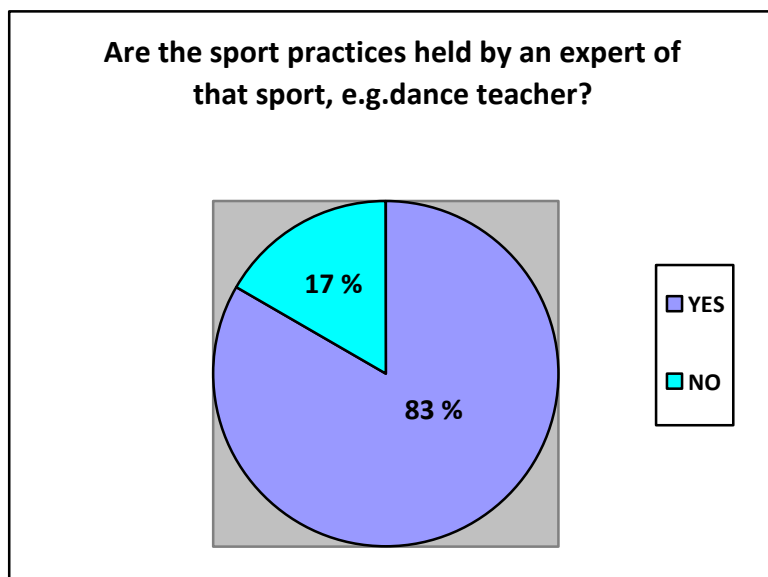


FIGURE 6. Other sport practices held by an expert of that specific sport (n=6)

FIGURE 6 represents the percentages of answers to the question “Are the sport practices held by an expert of that specific sport, e.g. dance teacher?” One response has been left out from the results, due to the fact that their organization does not offer outside sport practices. 83 % of the respondents utilize the services of an expert in the field, e.g. dance, gymnastics or Pilates, 17 % use their own figure skating coaches solely. All the respondents who said they

have an outside coach in their service informed that their own coaches also can be used to keep these practices.

6.3.3. Amount of practices

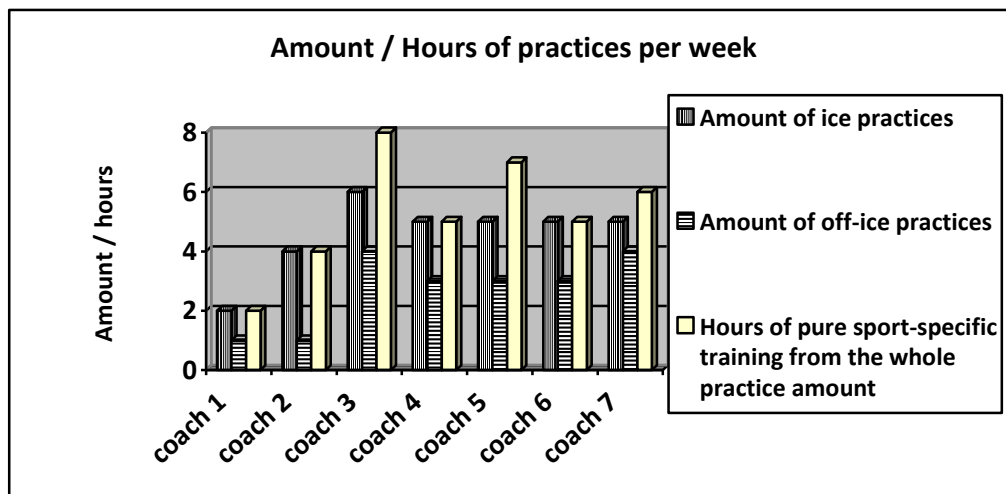


FIGURE 7. Amount / Hours of practices per week (n=7)

FIGURE 7 indicates the amount of practices per week or hours per week of figure skating training with 6 to 8 year old children. It becomes evident in the results that there is a big difference in the amount and hours of practices between figure skating clubs. When comparing the amounts of coach 3 to coach 1, the difference is huge in the hours of practice. It is obvious that more practices children have, the more they develop their versatile skills. Many of the respondents have more than one skill level group inside the whole amount of 6 to 8 year old children, so this matter also brings variations to the practice amounts.

6.3.4. Consideration of motor skills and development of organ systems

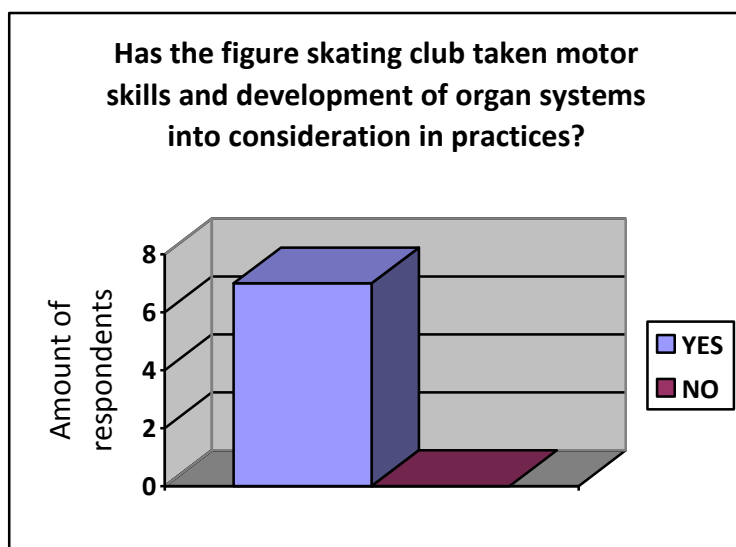


FIGURE 8. Consideration of motor skills (e.g. movements skills) and development of organ systems (e.g. nervous system) (n=7)

FIGURE 8 shows that all the respondents (100%) confirmed that their organization takes motor skills and development of organ systems into consideration in practices.

The coaches were asked to specify their answer and give more details about the contents of the practices. One coach did not give any details of their practices. Specifications are listed below:

- The aim for small children practices is to develop their readiness for exercising in a versatile way
- Coaches follow the children's development phases and sensitive periods individually
- Coaches go through basic movements of the children, starting from their walking examining how movements go with the body, e.g. in walking, in running etc.
- Coaches follow the overall development of the child's skills, e.g. drawing, crafts in show decorating etc.
- The objective is that if a preschool aged child drops out of figure skating, he / she has great basic motor skills to utilize them in another sport and thus possess a good base for different activity.
- The coach responsible of the group makes the plans according to the age level of the group.

- The practice plan includes gymnastic exercises (rolling, somersaults, cartwheels, hanging) and general jumps (leaps, two-and one-legged jumps) and body control movements (measuring worm, barrel rolling)
- Specific rhythmisation for the whole season (different sports included to the practice plan, e.g. orienteering 10 times per season)
- Short-term planning takes the age and development stage into consideration
- Children are on the average same ages

6.3.5. Consideration of sensitive periods and their utilization in practices

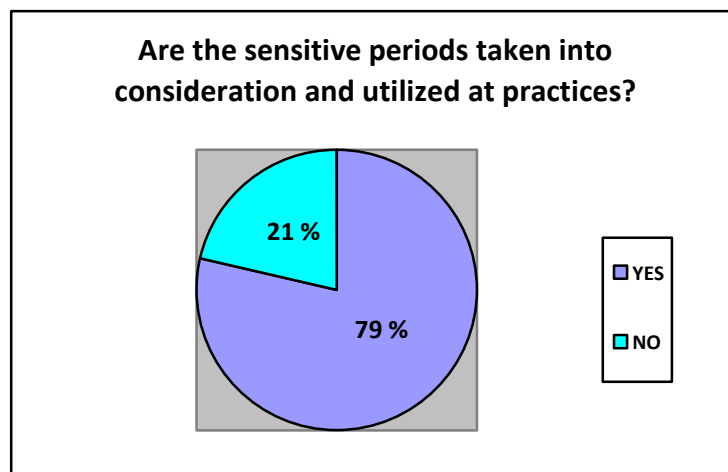


FIGURE 9. Consideration of sensitive periods and their utilization at practices (n=7)

The last question of the questionnaire was whether the organization takes sensitive periods of children into consideration and do they utilize them at practices. The FIGURE 9 represents the percentages of the answers to the question. Consideration of sensitive periods together with the features in the previous question should be the guidelines to planning a practice plan. 79 % of the respondents take sensitive periods into consideration in practice planning; on the other hand there were 21 % of the respondents who do not take sensitive periods into consideration. There seems to be big differences between organizations in this matter as well. Coaches were asked to specify their answers. One coach did not give specifications due to the negative answer. The specifications are listed below.

- Beginning of mobility training in childhood
- Keeping strength training play like, no specific strength training at this age (6 to 8 years old)
- Mentioned already in the previous question
- Referring to the previous question, speed (nervasion) and strength practiced with own body weight are emphasized in children's (aged 6 to 8 years old) training
- Training includes also mobility and coordination practices
- Listed in the previous question already
- Mobility and balance skills should be practiced more, but general exercise skills and sport-specific practices are executed well
- Practices are planned according to ages and development stages
- Group transfers are implemented according to the development - not to wait until the end of the season or month - "strike when the iron is hot"
- The possibility to offer private coaching in addition to the normal practices
- The importance of different sensitive periods, especially skill periods, are taken into great consideration

6.3.6. In your opinion, what are the 3 most important sectors of development in the figure skating training of 6 to 8 year old children?

This was the ultimate question in the questionnaire. Coaches were asked to give their own opinions in this open question. The question was not limited in anyway; the purpose was to receive as wide range of answers as possible. The answers of the coaches are listed below.

- Acknowledgement of own body (when a hand is in front, when a hand is behind)
- General movement skills
- Basic fitness (through games etc.)
- Excitement towards exercise in general
- Versatility
- Mobility training
- Basic exercising in a versatile way without sport-specific boundaries
- Basic skating in figure skating practices

- Within our sport (figure skating), coaches should feed the imagination of children aged 6 to 8, and give space for free expressions, so later on in practices it comes naturally without big effort
- Nowadays the basic motor skills of children are in a poor shape, so more time needs to be spent on developing basic skills.
- Sport-specific skills
- Speed
- Basic endurance
- All exercise
- The joy towards exercise
- Experiment of different sports
- Cooperation between different sports
- Body control
- Mobility
- Balance
- General basic fitness - versatility
- Skill, balance and control of own body movements
- Coordination and technique

6.4. Conclusions and recommendations

This study examined nationwide the coaches' thoughts of versatile figure skating practicing. In this research I wanted to receive feedback from the respondents' organizations, find out possible development ideas; see what possible needs are for versatile practices in everyday coaching, and also measure current situation of the quality of practices. The questionnaire questions were compiled according to these matters in cooperation with my own figure skating organization's personnel. Based on the answers the respondents gave, I was able to make conclusions and gain a profound base for my own thoughts and to support the literature. I was also able to make suggestions for future development. In the following I elaborate on the issues that were represented in the research and make arguments of the development ideas presented.

After receiving questionnaires from the respondent, the overall feedback was positive and it seemed that other figure skating coaches had similar concerns and thoughts towards the versatility inside the sport. I was able to receive responds from a wide range of age levels, the

youngest respondent being 20 years old and the oldest being 44 years old. It brings different perspectives to the conversation, where the experience meets maybe freshness and new ideas. If I had more time working with this thesis project, it would have been interesting to meet with these coaches or have a discussion over the phone and have more discussion on the table. There were many young respondents in the research, and they did not yet have much experience in coaching, so either they have great new ideas and perspective to the matter, or they are still lacking the knowledge of versatile training.

86 % of the respondents informed that their figure skating organization offers other sport training to the skaters in addition to sport-specific training. In my opinion, at least dance and ballet should absolutely include to the practice plans for children aged 6 to 8 years, and preferably one more sport that develops other physical areas and skill factors, e.g. athletics, gymnastics. There were many differences between organizations in what type of sports they offer to their skaters, some organizations even had a pilates instructor or a physiotherapist. The most important thing is that the figure skating organization needs to offer some other sports in addition to sport-specific training, not with the expense of sport-specific training.

Coaches working in figure skating and with small children must keep in mind the overall development of children, both physically and mentally. Coaches need to ensure that the child enjoys figure skating and sports in general, and develops his / her qualities in a balanced way. 6 to 8 year old children are at a high peak of developing physical qualities and skill areas, so they need to be given enough different type of stimulus. The coaches who responded to the questionnaire listed also many physical qualities and motor skills when asked about three most important developing areas of children. Learning a skill is so strongly emphasized in this aesthetic sport that to improve the learning and helping the teaching, coaches need to understand the importance of developing the underlying skills and qualities. This is how we create true versatile champions.

7. Material for versatile figure skating coaching

➤ Speed in a versatile way

Speed should be practiced with different work - and recovery durations. More versatile than basic sport-specific speed training, is to practice speed at various rhythm, surface and direction. Speed training before puberty should mainly happen through plays, games and amongst other play like practicing, and they should emphasize especially versatile motoric skills, muscle coordination and rhythmisation ability. At this age these features develop naturally, but versatile stimulus can accelerate the development. Purely sport-specific speed can be increased in small amounts, but main emphasis should be developing and giving stimulus to the general practicing of nervous system. Children are not yet capable for maximum speed bursts, but good practices for speed are e.g. competitions and relays alternating tempo and rhythm, coordination practices alternating movement rhythm and tempo. This kind of practicing with small children enables great amount of repetitions. Recovery periods at this age don't need to be long, even 20-30 seconds recovery in short 2-6 seconds working periods are sufficient. Basic principles of speed training in childhood should be developing the frequency of steps. Other principles are e.g. practices and plays need to implement the child's needs, sensitive periods are utilized and offered the possibility to move fast in exercises and also to practice speed early enough so that the development of central nervous system has not yet ended. (Miettinen 1999, 199.) In the table 5. are shown the basic principles of speed practicing and their definitions.

Table 7. Basic principles of speed practicing and their definitions (Hakkarainen et al, 223)

Principle of speed practicing	Definition
Speed and power of the performance	Speed can only be developed if the skater moves on the verge of his / her speed level, or performs the elements affecting speed as high quality as possible. In practice, the output should be close to 100%.
Endurance of the performance	Singular speed performance should not last over 10 seconds, because the body starts to produce lactic acid. Especially with children, the durations should be kept to minimum, recommendations of 1-6 seconds.

Duration of recovery	The recovery should always be absolute, so that the skater can perform a new performance with maximum output. Small children are not able to give a maximum performance and recover faster than young and adult athletes. Recovery duration recommendation 30 sec-1min.
Amount of performances	The amount of repetitions on a singular practice needs to create enough stimuli for developing speed, without decreasing the output. The younger the skater, the more repetitions he / she is able to perform, recommendations around 5-20.
Significance of “will power”	To perform speed practices successfully, children need to achieve a motivated and a strong will power stage. Speed practices should be done in the form of plays, games and relays.

Table 8. Types of speed and their definitions (Hakkarainen et al, 222, adapted Mero et al 1990)

Type of speed	Definition
Basic speed	General ability of nervous muscle system to react fast. Not a sport-specific quality, heritable, a feature obtained at childhood that creates a base for proper sport-specific speed training
Reaction speed	Indicates the duration from a stimulus to starting a movement. For example, in figure skating executing a Lutz-jump (e.g. rotation) after reacting to the exertion.
Explosive speed	Singular and quick as possible movement. For example, the exertion in figure skating

Progression speed	Cyclic performance, in other words a repetition of movement performance executed as fast as possible. For example skating speed, crossovers.
Speed competence	Nervous muscle system's ability to function quickly and meaningfully in movements demanding skill.

1. Night and Day

Purpose: Speed practice, includes coordination performance and sharp dashes.

Duration: 10 min

Movement skills: running, turning, speed, flexing-stretching

Equipment: Cones

Explanation:

Two groups against each other. Groups are predetermined to Day and Night. There is a safety-zone at the both ends of the area, where to the players must run without getting caught.

The children work in pairs. Coach shouting "Night", the "Day" goes to catch and the "Night" runs away. Starts from different positions, e.g. on their stomach, facing each other, sitting, on their back, standing etc. Recovery after the performance

To consider: Alternating the running distances and stimulus. A child does not need long recovery periods between spurts.

Increase difficulty: Involve equipment, e.g. a ball

Awareness and concepts: Quick coordination performance, Sharp dash

2. Sock sweat dash

Duration: min. 10min

Movement skills: running, turning

Equipment: socks

Explanation:

The children take off their socks; take the other sock in the middle circle and the other sock at the other end of the area. The socks are placed at random in piles. After this the children lay down on their back at the end of the area, soles of the feet facing a wall. They rise up from a signal as fast as possible, run to the closest pile of socks and try to find their own sock. After this they return to the starting spot, put on the sock, go down on the starting position and rush to get the other sock from the further pile. Once again, children try to find their own

sock, and return to the starting position, put on the sock and take the starting position. The fastest one is the winner. Can be done as a relay also.

To consider: Avoid bumping into each other. To avoid slipping, rules can be implied, e.g. when one sock on, jumping with the bare feet and when both socks on crab walking.

Simplify: Simple starting positions

Increase difficulty: Difficult starting positions. Huge amount of extra socks

Awareness and concepts: The child learns to regulate running speed. The child learns to react fast.

➤ **Motor skills in a versatile way**

Motor skills should be practiced in a versatile way by joining many various practices of different sports or by carrying out different practices that develop motor skills inside one sport.

1. 2 v 1 (who is afraid of the player - game)

Duration: min.10min

Movement skills: dribbling, bending-stretching, ball control on the ground / air, running, kicking, walking, turning, passing and ball control

Equipment: Balls, cones

Explanation:

The area of e.g. 40m x 30m. Two players at the centre of the area and the rest of the players at the end of the area in pairs (one ball per pair). The players at the centre shout "who is afraid of the player?" After the shout the pairs at the end will try to pass the players at the centre, who are trying to take the ball or cut the pass, and to get to the opposite side across the end line. It is not allowed to cross the sidelines of the area. If the centre players achieve to steal the ball, the pair in question will not get a point. If the centre players do not achieve to get a ball, the pair in question will get a point. The game can continue to e.g. 5 points, when the winning pair will start as centre players.

To consider:

The correct timing of the pass. Quickness of decision making (to dribble or to pass)

Simplify: Play with hands, when the ball is thrown from the waist height.

Increase difficulty: -

Awareness and concepts: Resolving the 2 v 1-situation in offence situation.

2. Pure football players

Duration: min.10min

Movement skills: running, dribbling, turning, body knowledge - and control, endurance, walking, ball control, speed, bending-stretching

Equipment: Balls

Explanation:

Children are clothes in a washing machine, and after the wash, they are placed in a neat order to dry. Children can name themselves what type of clothes they are.

Children perform a circle, line, row, so that every child understands the concepts. After this the children start to dribble a ball around the area. When the coach says one of the following; line, row or circle, the children take the ball in their hands and form a described order as fast as possible. When the order is correct, they continue to dribble the ball. Alternate the ways to dribble. Dribbling can happen either with legs or hands. Let the children decide dribbling ways.

Music can also be used to support the game. In that case, when the music plays, the clothes are in the washing machine (=ball dribbling) and when the music stops, the clothes are put to dry (=form a requested order).

To consider: Dribbling of the ball in a versatile way using both hands and legs. Learn to use the weaker hand and leg.

Simplify: On the first times, line, row and circle are formed at same places. Lines can also be used, or draw them on the ground or ice.

Increase difficulty: Divide the children into 2 or 3 teams. Which team can create the order the fastest?

Awareness and concepts: Learn the ball control with different parts of the body. Learn different orders; line, row, circle.

3. Lizards

Duration: min. 5min

Movement skills: Bending - stretching, twisting, turning

No equipment

Explanation:

Children go to the floor facing down. The coach suggests the lizards (alligators, crocodiles...) to wander along the dense woods. There is a threatening sound, STOP! Lizards freeze, and do not move until they are given a new instruction.

After this alternate the moving, e.g.:

- Bottom, one palm and one leg on the ground
- Cheek, one hand and two legs on the ground
- Knees and palms on the ground
- Stomach and knees on the ground

To consider: Create different ways to move using imagination.

Simplify: Simple movement styles

Increase difficulty: Many things to remember in the movement styles of the lizards

Awareness and concepts: The child learns to move in different positions.

4. Pair mirror on a bench

Duration: min. 2 min

Movement skills: Bending-stretching, twisting

Equipment: A balance base higher than floor level

Explanation:

The pair stands facing each other, both standing on a base requiring balance. The other pair does a movement requiring balance, and the other one tries to mimic the movement as a mirror image. After a couple of movements or a couple of minutes the pairs change roles independently or from a coach's signal.

To consider: Coach represents questions, which persuades the pairs for new type of challenges: "How can that be complicated?", "How is it easier to stay in that position?", "Can that be done standing on toes?" Coach gives examples of movements that cross the central line of the body.

Simplify: Pairs stand on the floor line.

Increase difficulty: Define a time limit to stand on the position. Higher or smaller base.

Awareness and concepts: The child learns how to maintain balance: calm movements and focus of eyes. The weight of the body divides even on the surface of the base.

5. Leap and fundamentals of hurdles

Purpose: Leaping over newspapers in various ways and practicing of hurdles in shuttle run.

Duration: min 20min

Movement skills: Jumping-leaping, running, bending-stretching

Equipment: Newspapers, tape, music

Explanation:

Move freely in the area yielding other children. Music regulates movement time and during breaks new instruction is given. Every child is given a page of a newspaper and they are placed around the area.

1. Run around the area and avoid touching the newspapers. When the music stops, children sit down on top of the nearest newspaper.
2. Run around the area and leap over a newspaper and be aware of the papers floating in the air. When the music stops, children place one hand and one foot on top of a newspaper.
3. Run around the area and leap over newspapers sideways. When the music stops, children will hide under the newspapers. Roll the paper into a stick which is closed with a tape. Place the stick on the ground.
4. Run around the area and leap over the sticks. When the music stops, children leap back and forth on top of the stick.
5. Stretching with the sticks: Grab the stick from both ends. Lift hands up and stretch to the sides. Bend down and come back up rolling the back. Repeat.
6. Shuttle run: Build two hurdle tracks from the sticks, e.g. 10 / track (approx. 1m distance, and if performed on the floor, tape the sticks on the floor). There will be lines at both ends of the track. The two tracks start from different sides of the area, so there will be no competing side by side, and children are able to concentrate on crossing the hurdle in a rhythm.

To consider: Children are encouraged to a fluent rhythmic running, not competing. Competitions after the children are succeeding in the running and crossing the hurdles. Distance of the hurdles.

Simplify: Alternate the distance between hurdles. Practicing the walking rhythm in crossing the hurdles.

Increasing difficulty: Lifting the height of the hurdles with available equipment.

Awareness and concepts: The child knows how to jump over an object in various ways regulating strength and recognizes a fluent performance.

6. Leaps and balance

Duration: min.20 min

Movement skills: jumping - loping - leaping, running, bending - stretching

Equipment: Benches, mats, music

Explanation:

Move freely in the area avoiding bumping into each other. Music regulates duration of movement and during breaks new information is given. Use the lines of the gymnastics floor so that in general children are running and when they come to line they must jump over it.

- “Can you jump over the line lightly / powerfully?”
- “Can you jump higher / lower?”
- “Can you jump quickly / slowly?”

- “Can you jump hands on the side?”

Children balance on long benches and lunge on a mat at the end of the bench. Place 4-5 long benches side by side so that approx. 2m is left in between. Place mats at the both ends of the benches, altogether 8 mats. Place children in lines at the end of the bench. Children walk to the other end of the bench and form a new line behind the mat. Children move back and forth.

1. Walk to the end of the bench and jump with one leg to the mat. (Full rotation and landing position)
2. Walk on heels to halfway and on toes the rest. Leap down.
3. Walk to the other end swinging the free leg and touch the leg with the opposite hand.
4. Walk in a squat position to halfway and take a few steps speed to the jump.
5. Run to the other end and leap to the mat.

To consider: The other side of the area is for warm-up activities and the other side is for the benches, which can be placed together with the children. When there is a child on the bench, the next one in line can step on the bench, so the bench doesn't lift due to the jumps.

Simplify: The child can choose to move in a way that is most suitable for them.

Increase difficulty: The bench can be turned upside down, when they have to use the narrower side.

Awareness and concepts: The child learns the influence of the use of strength and time for the leap.

➤ Rhythmisation ability in a versatile way

1. Rhythm circle and own body knowledge

Explanation:

Children stand on a circle. The coach sends a rhythm, e.g. jump 1 and clap 2. The child standing next to the coach performs the same rhythm and the following one, until the rhythm has circled the whole circle. The child standing next to the coach adds his / her own rhythm to the coach's rhythm, e.g. jump 1+clap 2+ own rhythm tramp 1-2. The rhythm circles again the whole circle. The game continues so that everybody can add their own rhythm on their own turn. If there are a lot of children, it might be difficult to remember all the rhythms at the end, but it is not impossible as long as the children are listening and paying attention.

To consider: Listen and observe carefully what other children do. Performances done steadily, no hurry.

Simplify: Everybody creates their own rhythm and it is repeated together.

Increase difficulty: Rhythms can be extended 1-4, creation of longer sets.

Awareness and concepts: Learn to combine movement and rhythm.

➤ **Endurance in a versatile way**

Endurance qualities should be emphasized especially in the childhood. These qualities should be practiced daily on various heart rates so that respiratory - and circulation systems would develop many-sided. Many of the games and plays listed here in the material package develop endurance qualities; therefore they have not been listed here. By alternating the length of the practices, it is possible to develop the child's endurance qualities in a natural way.

Basic principles of endurance training in childhood (Miettinen 1999, 208):

- Creates a good basic endurance and improves aerobic capacity
- Each practice session is recommended to include various games and running plays
- Practicing for aerobic endurance can never be started TOO early!
- Endurance practices should emphasize the quantity, rather than output
- Endurance practices need to be fluctuating, play like, fun and stimulating the child's imagination

Following practices are good for developing endurance (interval type):

- Different games and plays: tags, relays, dodge ball, small team games, basketball, football, volleyball, floorball etc.
- Figure running: the instructor marks small and large figures (shapes, animal figures, numbers, letters, which are run alternately or continuously)
- All type of running (e.g. in the forest or cross country)

➤ **Agility in a versatile way**

1. Agility competition

Duration: min.10 min

Movement skills: jumping - loping- leaping

Equipment: -

Explanation:

Performed in pairs. The other one is on the ground on all fours and the other one jumps over the pair's legs holding her from the waist. After the jump, she crawls under the pair as quickly as possible, jumps over the legs again and so on. Duration is agreed before the race, e.g.

30seconds. The winner is who is able to cross the pair the most. Change parts and try again.

To consider: When jumping, the grip / support should be at the waist level, not the back!

Simplify: No competition.

Increase difficulty: Compete several times and try to improve own record.

Awareness and concepts: The child learns to control their own body and ability to react quickly.

2. Basic skills of floorball

Duration: min.15min

Movement skills: running, jumping-loping-leaping, turning

Equipment: floorball sticks, jump ropes, music

Explanation:

Spread the sticks on the floor and jump ropes in a shape of labyrinth. During music, children are moving and during breaks listening to new information.

Directions:

1. Run freely zigzagging between the sticks.
2. Try to run backwards observing other children.
3. Try to move side first and change direction at times.
4. Try to run so that all directions are used.

Jumps:

5. Run freely and leap over the sticks.
6. Run and jump over the sticks with one leg.
7. Run and jump over the sticks by rotating in the air.

Agility:

8. Pick a stick and stand at the end of the stick. Run zigzag-steps to the end of the stick and walk back backwards.
9. Run around the whole area and zigzag at the sticks.

To consider: Movement during music. Listening to the instructions during breaks

Simplify: walking, not running

Increase difficulty: Combining different directions at same task. Change the area smaller.

Combining different practices. Performing the movements big or small, slow or fast, high or low. Performing all in pairs

Awareness and concepts: The child learns how to change running in a restricted area.

3. City Combat-track

Duration: min. 20min

Movement skills: running, jumping-loping-leaping, throwing-catching

Equipment: Soft balls, bench, mattresses, trampoline or hoops, a tunnel or build from the benches, cones

Explanation:

Divide the group in to 2 teams, fighters and survivors, and roles are changed after a certain period of time. Fighters place themselves into 3 different points: centre of the area, at both sides and at the end of the area few meters from the survivors' goal. Fighters' role is to bomb the survivors with balls.

Survivors try to escape agilely through the city without getting hit by the fighters. City=track.

1. Balance - run to the other end of the bench
2. Agility - somersault on a mattress
3. Jump - at a trampoline or a hoop track
4. Cover - few hiding places on the track built from mattresses or objects
5. Crawling - a tunnel or built from the benches
6. Running - Zigzagging a track from cones

The survivors' goal is situated at the other end of the city (area), approx. 2 meters prior to the fighters' ultimate throwing spot. Survivors are able to move freely in the structured area performing the tasks. If the survivors get hit by a fighter, he / she must return to the starting position, and the team does not score points. Survivors score a point for their team if they make it through the track without getting hit. City combat can be played for 5 min/team or 10 hits and change.

To consider: Specifically go through how to proceed at the track. Safety. Rules explained clearly.

Simplify: The more hiding places, the easier it is to move at the track. Only running at the track, leave the other tasks out.

Increase difficulty: Add more tasks to the track, e.g. one leg jumping, rolling.

Awareness and concepts: The child learns the rules and holds on to the agreed rules. Learns to move safely at the track.

➤ **Strength in a versatile way**

Strength qualities appropriate for each biological maturity stage should be practiced throughout all growth periods. In childhood the emphasis should be on the muscle endurance of midriff and practices should be versatile - movements upright, horizontally, hanging and so on.

It is important to remember that strength training before puberty should occur within games and different plays. Exercises should emphasize the muscle control, i.e. motor skills; this creates a base for later strength training. Current discussion topic nowadays is the poor muscle control and muscle endurance especially in the mid section amongst the young athletes, so this needs to be taken into consideration training for this character. Practices like trick schools, play like practices executed with own body weight, are excellent ways to practice these quali-

ties. In late childhood, before puberty, the child should be coached to the correct technique of real strength training, but it always needs to be executed with the supervision of the coach. It has been proved that with regular strength training, effects can be seen on the development of producing strength already with 6 year old children, and development has been seen on all strength areas. The main objective of strength training is to improve the producing of strength relevant to the sport, but developing sport specific strength is limited without enough good base of basic strength. Therefore the strength training needs to be a long-term and versatile process where all different strength qualities are practiced at their optimal stage. All sports and practices that require moving own body weight are efficient and safe. Abdominals - and back muscles are the first prerequisite for strength training later on in life. (Miettinen 1999, 60.)

1. A gift package

Duration: min. 5min

Movement skills: Body knowledge - and control, bending-stretching, twisting

Equipment: A soft platform

Explanation:

A child wraps herself into as tight package as possible and hides a small object inside the package (e.g. a ball or a bean bag). The coach (or another child) tries to open the package while the child tries to resist it. When the object is found, change parts.

To consider:

Not too rough.

Simplify: No objects. Stomach facing the ground

Increase difficulty: On their back, or on their sides

Awareness and concepts: The child learns to regulate use of strength.

2. Slow down

Duration: min.10min

Movement skills: pushing-pulling, running

No equipment

Explanation:

Pair competition. Mark 2 lines on the ground, approx. 10-15 meters from each other. The pairs stand on the other line one after the other, facing the other line. The child on the back grabs the child in front by "hugging". From a signal, the first one tries to run over the marked line and the one on the back tries to "brake" the movement. Change parts.

To consider:

The one on the back should put legs on a spread position. The one in the front puts legs together. Alternate pairs.

Simplify: -

Increase difficulty: -

Awareness and concepts: The child learns to regulate the use of their strength.

3. Children wrestling

Duration: min.20min

Movement skills: Body knowledge - and control, twisting, turning

Equipment: Tape, cones

Explanation:

Build five different wrestling points, where children practice in pairs. Duration at each point is approx. 30 seconds and recovery before the next point is approx. 1 minute.

Activity points:

1. Wrestling. The goal is to lift the pair up in the air and get him / her out of the limited area. (2m x 2m). Throwing, tripping and knocking over the opponent are forbidden.
2. Cockfight. Pairs are placed facing each other hands crossed, other leg in the air, and are trying to shake the pair's balance (free leg touching the ground).
3. Pushing competition. Pairs are placed backs opposite and are trying to push the pair out of the limited area. (2m x 2m)
4. Squat competition. Pair are placed facing each other in a deep squat and place their palms together. By pushing the palms together the children try to shake the pair's balance.
5. Pulling competition. Pairs take each other's wrists and will try to pull the opponent across a line that is in their between.

Depending on the children's enthusiasm, rounds can be between 1 -3. The coach controls the duration of the performance and recovery.

To consider: Safety. Enforce a behavior that is according to the rules at each point. The coach observes that everybody have roughly a same size opponent. Before actual competition, it is good to go through the activity with each pair. If there are a lot of children, there can be 2 points for each activity

Simplify: Shorter duration for performance and longer duration for recovery.

Increase difficulty: Prolong the performance duration.

Awareness and concepts: The child learns different wrestling methods. Learns to control use of strength.

➤ **Mobility in a versatile way**

Mobility practices should be done partially passively, partially actively. Versatile mobility practices vary in the length and positions of stretching and tissue structures restricting joint mobility will attain developing stimulus.

(Hakkarainen et al, 2009, 146)

Table 9. Methods of stretching to obtain different targets (Hohmann et al.)

Increasing joint mobility	Long-lasting stretching at a maximal stretching intensity, passive-static method
Increasing the tolerance for stretching	Short-lasting: large repetition of stretches Long-lasting: reduction of muscle tone, decreasing mental sensitivity
Warm-up	Active-dynamic stretches, stretching movements corresponding to sport-specific movements
Reduction of muscle tone	Active-static stretches, relaxation practices
Well-being	Relaxation, active-static stretches
Increasing sport-specific mobility	Active-dynamic stretches tracing sport-specific movements, strength training of antagonists

Mobility practices should be learning different methods of stretching and practicing these. In figure skating, this is an essential part of the sport, so mobility practices are included on the practice on a daily basis.

1. Back stick

Purpose: Strength - and mobility practices for body's mid section with a stick

Duration: min 15min

Movement skills: Awareness of body and body control, strength, basic gymnastics, gymnastics with equipment, mobility, jumping - galloping - leaping.

Equipment: Stick

Explanation:

1. Warm-up: Stand on the floor. Place the stick behind the neck on a horizontal position. Perform 10 jumping jacks. When legs are together, the stick is behind the neck and

when legs are spread, lift the stick up in the air with straight hands. Keep a short break and repeat.

2. **Abdominals:** Lie on your back and bend your knees. Place the stick on your hams and grab the stick outside the knees. Perform abdominal crunches 10 times by assisting the movement with your hands. Keep a short break and repeat three times.
3. **Back muscles:** Lie on your stomach. Grab the stick and bring the stick to a horizontal position in front of the head with straight hands. Lift the legs and upper body 10 times from the ground. Keep a short break and repeat three times.
4. **Stretching of the back:** Stand on the floor. Legs shoulder-width apart. Place the stick in your hams and take a good grab from the stick. Let the knees bend. Slowly, round the back and let the head fall towards the floor. Chin presses to the chest. Roll back a few times.

To consider: Slow pace. Movements performed with correct muscles and with no rush

Simplify: Less repetitions

Increase difficulty: In abdominals, the stick is placed behind the neck

Awareness and concepts: Learn to support the mid section muscles with a stick.

2. Gymnastics

Purpose: Speed walking, and dash running in lines, movement practices for the back and balance movements.

Duration: min. 20min

Movement skills: Bending-stretching, coordination, basic gymnastics, mobility, walking and running

Equipment: Music

Explanation:

Form lines of 4 children and start walking around the area. From the coach's signal, the last one in line starts to walk speed walking to the front of the line and continues to lead the line with normal walking rhythm (music). Try also other way around; the first one in line leaves behind and walks slowly backwards until he / she is the last one in line. Same is done running. Groups should do the practicing in the same direction.

Mobility practice for the back: Split the group in pairs. A) The other one goes down on all fours and bends the back and extends right/left leg on arabesque position, so now the pair is able to cross the other one's back with a high step. B) After this the other pair rounds the back and brings the legs together, and the other pair goes under the pair's stomach feet first. Repeat several times and change pairs.

Balance practice and arabesque: Pairs balance together as mirrors, so that the other one is first the leader. Bring hands to the sides straight and lift first the right leg knee up, bring it to the side and back several times. Switch legs and repeat the same. The other pair tries to follow

at the same rhythm. Change tasks so that the other pair repeats the same movement, but the leg is straightened. Practice arabesque in pairs so that the other pair is facing backwards to the other one executing the practice. A) The other one grasps the pair from the waist and performs an arabesque with a straight leg. The back lowers on a horizontal position, just a little bit bend and head held high. Try both legs. Try also to extend the ankle. B) Pairs are facing each other and take each other's hands.

Perform a pair arabesque so that pairs' ears are facing each other and hands are extended to the sides. Alternative: Extend hands to the front. Try to maintain the balance. Try both legs.

To consider: Lines circle in the same direction. Signs are given alternately.

Simplify: Use walls for support in balance movements.

Increase difficulty: Use a bench in balance movements

Awareness and concepts: Child knows arabesque and how to increase the mobility in the back.

3. Gymnastics II

Duration: min 30min

Movement skills: walking, coordination, basic gymnastics, running, mobility, body acknowledgement - and control

No equipment needed.

Explanation:

1. Move around the area freely walking and counting to four at the same time. Add a kick to the floor on the first step. Start together, and listen to the rhythm from the kicks. Add a clap on the third step. Start together and listen to the rhythm once again. Try the same running, first just the kick then add the clap.
2. "Rhythm worm": Make lines of 4 children. Everybody kicks the floor at the same time on step 1 and counts to four out loud. After this, the clap on three can be added, which everybody performs at the same time. Perform walking and running.
3. Make lines of 4 and everybody is given their own rhythm:
 - first one kicks the floor on 1
 - second one snaps fingers on 2
 - third one claps his / her hands together on 3
 - fourth snaps fingers on 4Let the children practice, coach can count rhythm (1-4).

4. **Stretches and mobility practices for the back:** A) Sitting legs together and a persistent stretch forward towards toes. B) Open legs to the sides and stretch down. C) One leg to the front and lean on top of the leg. Change.
5. Sitting on knees. Straighten the back. Round the back when the shoulders come in front. Push the back so that shoulders stay behind. Alternate calmly round back and swayback.

6. Lie down on top of the knees and relax shoulders and head. Stand up rounding the back and fall back down swayback-chest first. Shoulders relaxed. Count to 4, 1-2 up and 3-4 down.
7. Make waves so that as many children are side by side as possible. The other side starts the wave by falling head down. When everybody is down, the other side starts to lift the head up.

To consider: In rhythm walking it is important to give a clear starting signal, e.g. “Ready-Steady-GO”. Rhythm worm in a peaceful pace and counting the rhythm together. Stretches carefully and question which muscles stretch. Movement of the back is steady not twitching

Increase difficulty: Each step can be added a rhythm.

Awareness and concepts: The child knows how to give a rhythm to a movement in various ways.

4. Gymnastics III - own space

Duration: min.20min

Movement skills: Walking, coordination, basic gymnastics, gymnastics with equipment, running, mobility, throwing-catching

Equipment: Music, balls (2 per child)

Explanation:

1. Walking / running in own space:
 - Everybody draws a circle around them, which means own space. Children walk around in their own space as big as possible with the music. Change the walking so that children use as little own space as possible.
 - Running in own space as big as possible. Change the running so that space is used as little as possible.
 - Running in own space and from a signal change to a new own space and continue running. Change own space many times in a row, running backwards, and sideways.
 - Running in own space, and from a signal change the space next to someone’s space, and from a new signal change again.
2. Practices for mobility: hands and shoulders (use of balls in hands to enhance the rolling on the sides)
 - Roll shoulders backwards and then forward. Combine them into a rolling in an eight-shape.
 - Lift hands on shoulders and roll shoulders forward and backwards. Combine them into an eight-shape on the sides of the body.
 - Draw a circle backwards and forward. Draw an eight shape forward and backwards on the sides. Perform the same with the other hand and both hands at the same time.
 - Ultimately, try to roll both balls and throw them as far as possible.

To consider: It is good to use fast tempo in visioning own space, when changing space can be performed by dashing to the new space. Use of the whole area. Shoulders and elbows can be rolled at the same time. The ball (or similar) helps to find the correct movement track at the side of the body.

Simplify: Perform the practice by walking. Leave the eight-shape out.

Increase difficulty: Find the new space in a fast rhythm. Perform the hand rolling at the front of the body and follow the shapes with eyes.

Awareness and concepts: The child learns what is meant with own space and moving in it.

8. Summary

The purpose of the thesis was to research how to create as versatile practices as possible for children aged 6 to 8 in figure skating. In addition, I wanted to find out how versatility is taken into consideration in other figure skating clubs nationwide. This topic has been my own personal interest for quite some time, and for this thesis I received backup from my own figure skating club manager and other peer coaches.

The thesis is divided into three parts; theory, empirical and material part. The theory part of the thesis concentrates on the physical development of 6 to 8 year old children. This includes 6 to 8 year old child as an exerciser in general, 6 to 8 year old children as figure skaters, development of organ systems, sensitive periods and other physical attributes of physical activity reviewing the literature and the articles of the topics. Information was also acquired by sending a questionnaire to figure skating coaches under the Finnish Figure Skating Association.

The empirical part of the thesis was carried out by sending a questionnaire to figure skating coaches under the Finnish Figure Skating Association. I hoped to gain more perspective on the current situation about the quality of coaching with 6 to 8 year old children by conducting this type of questionnaire. The questionnaire was responded by 7 figure skating coaches, who were aged between 20 and 44 year old female coaches. The coaches had been coaching figure skating for 2 - 24 years. The questionnaire reached many figure skating organizations, but there were only a few respondents. The timing for the research was not ideal; therefore it was seen in the amount of the results. Coaches and organizations are occupied at this moment with the end of season, which includes final competitions, spring shows and so on. Even though results are only guidelines, and more research needs to be conducted in this field, it will give some perspective of the current situation, and this material shall be sent to all the figure skating organizations and to the Finnish Figure Skating Association for more research and development.

There are many studies done in the field of children's activity, and the most recent study (National Exercise Study 2009-2010) reveals that children are more actively involved in sport organizations compared to past years; 43 % of children and young people are involved in a sport organization. On the contrary, the same study shows that children are in much poorer physical condition than before. What this means, is that children are less active outside the organized sport club practices. Children used to play a lot of backyard games and street games together with the neighboring children, and thus gained many motor skills, and their physical condition

improved “by accident”. Nowadays, the amount of this type of playing has decreased and due to this results show negative effect on their physical condition and general motor skills. This creates pressures for those sport organizations where children are practicing. They spend a certain amount of hours per week at their practices, and that very well might be the only time they spend training and getting somewhat physically exhausted. If the rest of the time is spent to none-physically demanding activities, e.g. computer games, does it become the sport organization’s duty to develop the child’s motoric ability and physical qualities? Simply, sport organization’s practices are not able to cover the recommendations for amounts of normal sport exercising, let alone covering the weekly amount of practice hours of a figure skater aiming to the top. On the other hand, even if the sport organization is not able to cover these amounts, the organization needs to take these aspects into consideration in their season planning. As figure skating is a strongly skill and sport-specific based sport, developing the physical qualities and motor skills already at an early age will benefit and support the skill teaching at the ice.

This research only includes few figure skating organizations under the Finnish Figure Skating Association, mainly due to the reasons represented in the conclusions of the research part, and the respondents were all mainly from smaller organizations. In bigger organizations it can be assumed that the versatile training has been taking well into consideration. Bigger organizations, such as organizations in the capital area, are much more organized coaching wise, and have the knowledge of high quality training. I was not able to receive answers from these bigger organizations, so results of this research can be rather misleading in some parts. But as there is such a big gap between the small organization and the big organization, this type of research needs to be more investigated in the future. In my opinion, the versatile training and high quality is assured at big organizations, but smaller organizations lack the professional coaches, and therefore the professional approach and knowledge of children’s versatile training.

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APPENDICES

APPENDIX 1

EFFECTIVENESS TO FIGURE SKATING COACHING THROUGH VERSATILE TRAINING

Dear recipient,

I am a student from the Sport Institute of Finland Vierumäki and I shall be graduating from a Degree Program in Sport and Leisure Management at the spring 2010. The Degree studies also include a Bachelor's Thesis. The purpose of this questionnaire is to survey the figure skating clubs' current state in taking consideration the versatility of the practices. The desire is to investigate how developing the basic motor skills and skill sectors have been considered as a support for teaching the sport-specific skills.

The questionnaire is targeted at the children's practices, in which the children compete and practice at the Tintit-group (6-8 year olds). This questionnaire has been sent to all the figure skating clubs under the Finnish Figure Skating Association.

You can also add free speech relevant to the topic at the end of the questionnaire. All the respondents shall receive the results of the questionnaire and material related for the research.

I kindly ask you to return your answers via email as an attachment by **LATEST Wednesday 31.3.2010** to Kati Mälkki: katimalkki.ltl@gmail.com

Thank you for your time!

Kati Mälkki

katimalkki.ltl@gmail.com

044-2899749

Sport Institute of Finland

APPENDIX 2

Background information

1. Gender Female _____ Male _____
2. Age _____ years
3. I've been a coach in a figure skating club for _____ years.
Current club (voluntary): _____
4. I've been working amongst other sport coaching
5. _____ Yes
_____ No
Specify please (sport, duration):

Versatility in the practices of the club

6. Does the club offer other sport practices REGULARLY for its skaters?
_____ Yes; _____ hours per week
_____ No
Sport / Sports:
Are the practices held by an expert in the other sport, e.g. dance teacher?
_____ Yes
_____ No
Which sport?
7. a) How many ice practices do the skaters have per week:
_____ practices
b) How many off-ice practices do the skaters have per week:
_____ practices
c) How many hours from whole amount is purely sport specific training:
_____ hours
8. Are general motor skills (e.g. movement skills) and development of organism (e.g. nervous system) considered in the club's practices?
_____ Yes
_____ No
Specify how please:
9. Are the skaters' sensitive periods considered in the club's practices and are they being employed?
_____ Yes
_____ No
Specify how please:
10. In your opinion, which 3 sectors are most important in developing training for 6 to 8 year old children?