

Guidebook for KooVee Ice Hockey - From ice hockey player into an athlete

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<p>The Purpose of this thesis was to write a guidebook for KooVee ice hockey coaches, players and parents. The guidebook includes general information about athletes way of life and what it means.</p> <p>Idea for making a guidebook for coaches, players and parents of Koovee ice hockey came with identifying the lack of knowledge on how to live everyday basis like an athlete. Idea was discussed with representative from KooVee Ice Hockey.</p> <p>This guidebook provides information on athletes way of life and Long-Term Athlete Development model. Athletes way of life portion provides key points on what happens outside the rink, nutrition, sleep & rest, recovery, and time management & life control. Long-Term Athlete Development model portion provides information on what to do in order to develop young athletes.</p> <p>Objective is to raise awareness and knowledge among players, parents, and coaches on how important it is to be an athlete in order to develop as an ice hockey player and what methods can be used in everyday life. Feedback for the lack of information was gathered by discussing the matter with other coaches in the organization.</p>	
Keywords Athletes way of life, Long-Term Athlete Development, Ice Hockey, Guidebook	

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1 Introduction

This guidebook was made in co-operation between KooVee Ice Hockey. KooVee is a Finnish multiple sport organization based at Tampere, Finland. KooVee is founded in 1929. KooVee Ice Hockey offers youth hockey teams in 12 different age groups all the way from learn to play to U20. KooVee Ice hockey also have a team that play in the second highest league in Finland, Mestis.

Ice hockey is considered to be one the most challenging sports in the world. In order to achieve elite level, players have to be athletes on and off the ice and live athletic lifestyle. This guidebook will cover on how to raise young athletes into an athletic lifestyle and what does athletes way of life mean.

"Is hockey hard? I don't know, you tell me. We need to have the strength and power of a football player, the stamina of a marathon runner, and the concentration of a brain surgeon. But we need to put all this together while moving at high speeds on a cold and slippery surface while 5 other guys use clubs to try and kill us. Oh yeah, did I mention that this whole time we're standing on blades 1/8 of an inch thick? Is ice hockey hard? I don't know, you tell me." – Brendan Shanahan

Idea for making this guidebook came from identifying the need to add knowledge for athletes, their parents and coaches about athletes way of life and how important the way of living is in order to make it to the top. One does not born as an athlete, it's something you grow into.

This guidebook consists of information on what does athletes way of life mean and what does it include. Information about athletes development in long-term is presented as well. Athletes way of life is divided into four sections, nutrition, sleep & rest, recovery, and time management & life control. Athletes development in long-term is also divided into four sections, FUNdamentals, learning to train, training to train, and training to compete. Each of the sections mentioned before contains information about what and how to practice during different age levels.

Purpose of the project was to produce a guidebook that will be translated into Finnish and published at KooVee Ice Hockey webpages. The idea is that this guidebook will be updated occasionally by the organization

2 Ice hockey player as an athlete

Ice hockey is a game played on ice surface. Game is held between two teams competing against each other, team that scores more goals wins the game. At the start of the game each team has six players on the ice, five skaters and a goaltender. (Korpela & Sainio, 2019).

The rules of ice hockey allows players to make line changes on their own which allows each player to play a high-paced game throughout single shift. (Rouvali, 2014). Single shift is usually 15-60 seconds and players skate 250-300 metres in one shift. During a period each player plays between 7 to 10 shifts. Between shifts players get to rest approximately 1-3 minutes. On the ice players use typically anaerobic muscle work (Laaksonen, 2011)

Ice hockey is one the fastest sports played. Playing ice hockey requires a lot from the athlete physically, mentally, and sport specifically. In anthropometrics stand point ice hockey players have become progressively faster, stronger, and more aerobically fit. (Peltonen 2015, Laakso 2015)

3 Athletes way of life

Athletic lifestyle is an important building block towards development in any sports. Fundamentals for proper athletic lifestyle are skills to combine training, nutrition, versatile exercising, school and rest. Especially young athletes need to have good time management in order to manage the fundamentals. Athletic lifestyle is above all young athletes attitude and behaviour towards different aspects of life, which are how an athlete eats, sleeps, and builds weekly timetable. (Valo 2018, Finni & Tarvonen 2018)

Figure 1 describes “holy triangle” of development. Prerequisite of physical development is that all parts of the triangle are as big to each other and in balance with another. In case of one the parts of the triangle is not correct, development of the athlete suffers and chance for injuries and sickness increases. Rest is affected by amount of sleep, sleep rhythm, and actions in spare time. Nutrition is built up on daily meals, hydration, and meal rhythm during an athletes day. (Finni & Tarvonen 2018)



Figure 1. “Holy triangle” of development. Harjoittelu=Exercise, Ravinto=Nutrition, Lepo=Rest, Kehitys=Development. (Finni & Tarvonen 2018)

3.1 Nutrition

Physical activity and proper diet secure child regular growth and development. Dietetics started early in life will create good foundation for healthy childhood and will carry on throughout adulthood. In sports proper nutrition is considered to be a cornerstone for development, staying healthy and coping with workload. Good diet will also influence succeeding in school. One of the most important fundamentals is meal rhythm. During a day athlete should eat five to eight meals. Ideal meal rhythm depends on athletes sport and amount of practice. (Hakkarainen 2015, 92, Hiilloskorpi & Arjanne 2016, 161, Hiltunen & Laitila 2018)

Energy necessity grows through childhood and adolescence. In puberty energy necessity grows significantly due to fast growth. High amount of exercising raises energy necessity

even more. For boys need of energy is on average greater than what it is with girls. Boys grow faster, they have more weight and muscle mass than girls. After growth spurt energy necessity decreases significantly. (Ilander 2010, 32-35).

Young athletes diet aims to compose a ensemble from nutrients where needed amount of energy and proper amount of other nutrients can be gained. For young athletes diet that supports growth, development, and well-being composes mostly on carbohydrates, fats, and proteins. (Ilander 2010, 55)

Nutrient	Amount of total energy
Carbohydrates	45-60%
Fats	25-35%
Proteins	15-20%

Figure 2. Recommended percentage of nutrients in young athletes diet. (after Ilander 2010, 55)

Total energy necessity for young athletes can be shown in recommendation for kilocalories towards a day (Figure 3 & 4). (Ilander 2010, 36)

Age	Slight physical activity kcal/kg/day	Physically active kcal/kg/day	Physically highly active kcal/kg/day
10	60	68	75
11	56	63	70
12	52	60	67
13	50	56	63
14	49	55	63
15	46	52	60
16	45	51	57
17	44	50	56

Figure 3. Energy necessity for 10-17 boys by physical activity (Becker 2004).

Age	Slight physical activity kcal/kg/day	Physically active kcal/kg/day	Physically highly active kcal/kg/day
10	52	60	67
11	48	55	61
12	45	51	57
13	43	48	54
14	39	45	50
15	38	43	49
16	37	43	48
17	37	42	46

Figure 4. Energy necessity for 10-17 girls by physical activity (Becker 2004).

3.1.1 Proteins

Proteins are the most important building block for muscles and bones. Need for proteins is specially high during growth period. Exercising adds need for proteins even more, especially if an athlete is aiming to gain muscle mass. Proteins most important job in human body is to participate in protein synthesis, vital targets are between enzymes, hormones, and nervous system neurotransmitters synthesis. Other important job is to participate in energy production. (Mero 2007, 152, Ilander 2010, 62-64)

Proteins that include all the necessary amino acids are considered perfect proteins, the rest are considered incomplete and they are missing one or more essential amino acids. Nutrition that includes dominant factor of incomplete proteins leads to undernourishment of proteins, even if the absolute amount (g/kilogram) and amount of energy (kcal) would be enough. Proteins that come from animals are considered to be perfect and proteins that come from plants incomplete. (Mero 2007, 148). Figure 5 shows the most common source of proteins and their grading (McArdle 2001) and figure 6 shows differences in proteins from animals and plants. (Fineli 2009)

Source	Grade
Egg	100
Fish	70
Beef	69

Cow milk	60
Brown rice	57
White rice	56
Soy beans	47
Whole grain Wheat	44
Peanut	43
Dry nuts	34
White pota- toes	34

Figure 5. Biologic protein classification for common proteins. Highest value 100 is with eggs and others are compared to them. (McArdle 2001)

Food	Portion	Protein g/ portion
Sirloin steak	120g	37
chicken breast fillet	120g	27
Rainbow trout	120g	26
Tuna (canned in water)	90g	23
Skim milk	500g	20
Quark	100g	11
Cheese, 24% fat	40g	11
Cottage cheese	50g	8
Turkey fillet	40g	7
Egg	60g	7
Yoghurt, fat-free	200g	7
Almond	30g	7
Whole-grain ryebread	100g	6
Bean, brown	60g	5
Pasta, white	160g	5
Tofu	60g	5
Chickpea	60g	5
Oatmeal porridge	250g	4
Pea, frozen	60g	3

Figure 6. Different meals average protein content (Fineli. 2009)

Example for young athletes on how to get enough proteins a day. (Figure 7).

Meal	Content
Breakfast	Homemade granola with milk, whole-grain bread with ham, margarine and vegetables, water
School lunch	Potatoes, fish, grated food, salad dressing, crisp bread with margarine, milk and water
Afternoon snack at school	Boiled egg, fruits, nuts, water
Before practice	Brown karelian pasty, cottage cheese, bottle of fruit/vegetable shot, water
After practice	Bottle of yoghurt beverage, fruits, water
Dinner	Chicken/vegetable wok, whole-grain rice, water
Evening snack	Whole-grain toast with tuna, pesto and tomatoes, milk, water

Figure 7. Timetable for eating and content (Illander 2010)

3.1.2 Carbohydrates

Carbohydrates are the most important source for energy, they are composed by carbon and water. Carbon atoms, hydrogen atoms, and oxygen atoms creates carbohydrates or sugar molecules. Common simple sugar is glucose. Fructose and galactose structure differ only a little from glucose. Most of food carbohydrates storages in muscles where they work as a primary source for energy during exercise. In order for effective exercising muscles glycogen storages must have enough carbohydrates, this also helps to reduce stress towards body and muscle tissue caused by exercising. It can be said that consuming carbohydrates prevents overwork, repetitive strain injuries, and decrease of immune system. (Illander 2010, 58-59, Mero 2007, 155).

In order for successful exercising, muscles energy storage has to be big enough, other factor for successful exercise is that bodies blood sugar levels are normal. Maintaining normal blood sugar level helps to have enough strength in school and in everyday life. Lack of carbohydrates, irregular meal rhythm or consumption of wrong kind of carbohydrates may lead to excessive change in blood sugar levels. Too low blood sugar levels may lead to nausea, bad mood or exhaustion. (Illander 2010, 58-59).

In order to maintain stable blood sugar level and getting enough carbohydrates every meal should contain food that has carbohydrates. Maintaining good blood sugar levels and vitality requires consuming foods where carbohydrates infiltrates slowly, these kind of

food has low glycemic index (GI). Foods where carbohydrates infiltrates quickly have high glycemic index. (Figure 8 & 9) (Ilander 2010, 59).

Foods where carbohydrates infiltrates quickly (high GI)	Foods where carbohydrates infiltrates moderately fast (moderate GI)	Foods where carbohydrates infiltrates slowly (low GI)
Sweets	White rice	Uncooked porridge flakes
Cereals	Brown rice	Whole-grain pasta
Juice	Pasta	Bran
Fluffy bread	Noodles	Homemade granola
Sweet milks and puddings	Granola bars	Berries
Soda	Snack biscuits	Fruits
Mashed potatoes	Porridge	Beans
Raisins	Whole-grain rye bread	Peas
Sport drinks	Natural juice	Natural yoghurt
Potatoes	Bananas	Milk
Glucose and sucrose	Shots and smoothies	Fructose

Figure 8. Foods with different glycemic index. (Ilander 2010, 60)

High glycemic index (GI) (> 70)		Moderate glycemic index (GI) (55-70)		Low glycemic index (GI) (< 55)	
Food	GI	Food	GI	Food	GI
Glucose	100	Whole-grain bread	69	Bananas	52
Sports drink	95	Soda	68	Porridge	49
Potatoes	85	Instant porridge flakes	66	Chocolate	49
Corn flakes	84	Sucrose	65	Orange	43
Honey	73	Muffins	62	Pasta	41
Water melon	72	Ice cream	61	Apple	36
White bread	70	Rice	59	Flavored yoghurt	33
		Orange juice	57	Milk	27
		Mango	55	Fructose	20

Figure 9. Examples on different foods glycemic index. (Burke 2000).

3.1.3 Fats

Fats are long hydrocarbon chains that consist carbon, hydrogen and oxygen. Approximately 98% of nutrition fat are in form of triglycerides and about 90% of body fat is stored in fat tissue. Fats form biggest energy storage in human body, one gram of fat holds 9 kilocalories and it ties little bits of water. Fat percentage with men is approximately 15% and with women fat percentage is approximately 25%. Man who weighs 70 kilograms has 10,5 kg of fat and has 94 500 kilocalories of energy stored. (Mero 2007, 161-163, McArdle 2001).

In diet athletes should favor unsaturated fat over saturated fat. Guidelines states that two thirds of the fat consumed should be monounsaturated fat and polyunsaturated fat. At tops one third of the fat consumed should be saturated fat. Excessive amount of saturated fat has been related to high level of cholesterol which leads to decrease health in blood vessels and heart. (Ilander 2010, 65)

Food	Saturated fat	Monounsaturated fat	Polyunsaturated fat
Canola oil	6%	58%	36%
Nuts and seeds	13%	31%	56%
Olive oil	15%	73%	12%
Avocado	20%	71%	9%
Fish	24%	39%	37%
Vegetable fat	30%	46%	24%
Egg	31%	50%	19%
Chicken	32%	50%	18%
Vegetable fat cream	34%	48%	18%
Pork	41%	47%	12%
Beef	52%	44%	2%
Cocoa butter	62%	34%	4%
Butter, milk, cream, cheese	66%	30%	4%
Coconut butter	92%	6%	2%

Figure 10. List of different food and their fat types. (Ilander 2010, 66)

3.1.4 Vitamins & Minerals

Vitamins play essential part in metabolism. Human body can't produce enough of vitamins so we have to get them elsewhere, from food or from supplements. In lack of vitamins metabolism dysfunctions and it leads to decrease of general condition, ability to work, and exercise capacity. Vitamins are vital for physiologist operations, it's also notable that vitamins are vital in proteins, carbohydrates, fats, and minerals chemical reactions. (Mero 2007, 166).

Vitamins are divided to two groups, fat-soluble and water-soluble vitamins (Table 9). Fat-soluble vitamins aren't unconditionally necessary on daily basis because they are stored in fat tissue. It might take long times before insufficient amount of fat-soluble vitamins causes distractions in human body. Overdose of A- and D- Vitamins in long-term can cause toxic symptoms. Water-soluble vitamins acts as a coenzymes in many metabolic reactions. Unlike fat-soluble vitamins water-soluble vitamins doesn't store in great amounts, instead redundancy of water-soluble vitamins departs human body with urine.. The effect of water-soluble vitamins after intake lasts for 8-14 hours, for example C-Vitamins should be consumed every 12 hours. (Haymes 1991, Mero 2007, 166-167).

Group	Vitamin	Name		Where to get
Fat-soluble	A-vitamin	Retinol		Dairy products, margarine
Fat-soluble	D-vitamin	Cholecalciferol		Dairy products, cod-liver oil
Fat-soluble	E-vitamin	Tocopherol		Greens, seeds, vegetable oil
Fat-soluble	K-vitamin	Phylloquinone		Greens, seeds, fruits, meat, grain products
Water-soluble	B1-vitamin	Thiamin		Meat, whole wheat-grain
Water-soluble	B2-vitamin	Riboflavin		Protein and carbohydrate food
Water-soluble	B3-vitamin	Niacin		Liver, meat, grain products

Water-soluble	B6-vitamin	Pyridoxine		Meat, vegetables, dairy products
Water-soluble	B12-vitamin	Cyanocobalamin		Meat, egg, dairy products
Water-soluble	Folic acid	Folate		Vegetables, wheat
Water-soluble	B5-vitamin	Pantothenic acid		Protein and carbohydrate food
Water-soluble	H-vitamin	Biotin		Vegetables, meat
Water-soluble	C-vitamin	Ascorbic acid		citrus, tomatoes, red pepper

Figure 11. International recommendation for 13 vitamins. (RDA 1989)

Approximately 4% of human body weight are minerals, minerals forms mostly on metals and there are 22 mineral elements in human body. Most of the minerals can be found in living cells even though they are not inevitable for human being. Minerals can be parts of enzymes, hormones, and vitamins or they can be linked up to other chemicals such as calcium phosphate in bones. Bodies minerals are divided in two groups, trace minerals and macro minerals. On daily basis human body needs macro minerals over 100mg/day and trace minerals under 100mg/day. (Mero 2007, 171).

Minerals have three different roles in human body: 1) They form structure to bones and teeth, 2) while functioning they maintain hearts operation, muscles contraction ability, nervous systems functions, 3) plays vital part in cells metabolism as a part of enzymes and hormones. (Mero 2007, 171)

Group	Mineral	Where to get	Signification
Macro minerals	Calcium	Dairy products, Vegetables	Form bones and teeth, coagulation of blood, function in nervous system
Macro minerals	Phosphorous	Dairy products, meat, fish, grain products	Form bones and teeth, maintaining acid-base homeostasis

Macro minerals	Potassium	Greens, potatoes, bananas, milk, meat, coffee, tea	Fluid balance, function in nervous system, maintaining acid-base homeostasis
Macro minerals	Sulfur	Partly from proteins	Maintaining acid-base homeostasis, liver functions
Macro minerals	Sodium	Salt	Maintaining acid-base homeostasis, nervous system, fluid balance
Macro minerals	Chloride	Salt	Important part of liquid outside cells, activation of enzymes,
Macro minerals	Magnesium	whole wheat grain, greens	Takes part in protein synthesis
Trace minerals	Iron	Eggs, meat, whole wheat grain, vegetables	Part of enzymes and hemoglobin
Trace minerals	Fluorine	Water, tea, fish	Building block for teeth and bones
Trace minerals	Zinc	Many different meal, for example meat, and grain	Part of enzymes
Trace minerals	Copper	Meat, water	Part of enzymes
Trace minerals	Selenium	Fish, meat, grain	Fat-metabolism together with Vitamin-E
Trace minerals	Iodine	Fish, dairy products, vegetables, table salt	Function of thyroid
Trace minerals	Chromium	Whole wheat grain, meat	Part of enzymes, protein- and carbohydrate metabolism.

Figure 13. Most important minerals, where to get them, and signification. (after Mero 2007, 172).

3.1.5 Water & Hydration

Depending on age, gender, and body composition, 40%-70% of body weight is water. 65%-75% of muscle weight and approximately 10% of bodies fat is water. In case human body doesn't have enough water it affects negatively on performance. Water is essential

nutrient, without water human dies in few days, on average human body needs 2,5 liters of water a day. In human body it acts as a medium between transport and reactions. Water is also notable factor in thermoregulation and lubrication of joints, because the capacity of water can't be changed it gives body its structure and shape. (Mero 2007, 173-174).

Checklist for maintaining optimal hydration in growth age (Hakkarainen 2015, 93):

1. Recommendation for drinking liquids should be based on amount of liquid and loss of body weight – universal instructions are difficult to give because reactions are unique.
2. Easy way to evaluate loss of fluids is to weigh in before practice and right away after practice. When known the amount of fluids consumed, multiply loss of weight by 1,2 and the result is the amount of liquids needed.
3. 3-5dl of liquids approximately 35-45 minutes before practice is enough for most children for the whole practice if air temperature is normal.
4. Kids rarely need more than 0,75,1,0 liters of fluids for a practice.
5. Kids should be urged to drink small portions before clear feeling of being thirsty hits.
6. Water is primary option in regular circumstances, in hot circumstances mildly sugared beverages are justifiable.
7. Great amounts of liquids consumed at once should be avoided, it may cause pain and nausea due to the feeling of stomach being full.

3.2 Sleep & Rest

Purpose of exercise is to affect adaptive homeostasis. After exercise recovery and development happens during rest. This theory of supercompensation has been acknowledged by coaches for a long time and planning of practice programmes has been based on alternation of hardcore practice and easy practice. Rest and recovery phase should be a condition for body where stressed tissues and energy and regulation systems have time to recover and developed without too much stress. Various questionnaires says that many young athletes have problems with fitting school, studies, exercising and proper rest together. The significance of sleep for kids growth and development is no-brainer, for growth age autonomic nervous system that regulates various body functions and hormonal functions demand top quality and cyclic sleep. (Hakkarainen 2015, 93-95)

3.3 Recovery

During sleep happens also vital part of generating engrams, learning and repairing damaged tissues due to training. Muscles tissue damages and energy supplies recovers better

from exercise under the influence of anabolic hormones. Anabolic hormones such as testosterone and human growth hormone excretion is cyclic and hormone concentration varies greatly during a day. Hormone excretion is especially vivid during sopor stage of sleep. These anabolic stages of sleep will be best accomplished when falling asleep and waking up are cyclic, all this because of circadian watch that tries to achieve regular rhythm. Recovery of nervous system needs also cyclic sleep. To gain maximal recovery athlete should follow a regular meal- and sleep rhythm each day. (Hakkarainen 2015, 95)

3.4 Time management & Life control

Development of physical condition requires quantitative and versatile training and exercising. Training and resting has to be in balance to get development and avoid becoming overloaded, injured or getting sick. Amount and regularity of sleep are crucial factors towards recovery and development. Healthy nutrition and regular meal rhythm are considered to help recovery. (Finni & Tarvonen 2018).

Physical and mental load is crucial towards development, young athletes has often problems harmonizing school, exercise and getting sufficient amount of rest. For example combination of excessively long-term or frequent school period and heavy exercising leads easily to exhaustion or even to overload. Figure 14 describes situation where “holy triangle” of development is not in balance. Increased amount of practice doesn’t lead to optimal development if athletes amount sleep, sleep rhythm and nutrition habits doesn’t correspond to increased level of overall load. Despite increased amount of practice athlete won’t develop, which may lead to frustration and tired athlete is exposed to injuries.



Figure 14. Unbalanced “holy triangle” of development. Harjoittelu ja muu kuormitus=Exercise and other load, Ravinto=Nutrition, Lepo=Rest, Kehitys=Development. In case of some parts of the triangle not being in balance development suffers. (Finni & Tarvonen 2018).

Growing athlete should pursue cyclic rhythm of exercise, sleep and nutrition. Athlete has pace time management so that exercise and recovery from exercise would be optimal. Figure 15. sets daily timetable where school, practice, eating and sleep are in regular cycle. Big red zones in cycle pictures common meals such as breakfast, lunch and dinner and thin red zones pictures snacks. Black zones pictures stress phases caused by school and practice. Grey zone pictures sleep. (Finni & Tarvonen 2018)

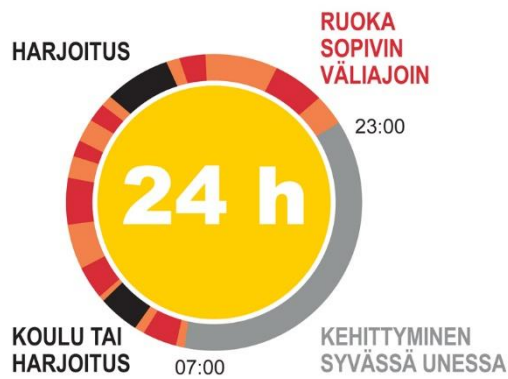


Figure 15. Daily timetable. Koulu tai harjoitus=School or exercise, Ruoka sopivin väli-ajoin=Meal with proper occasion, Kehittyminen syvässä unessa=Development in sleep. (Finni & Tarvonen 2018)

4 Long-Term Athlete Development (LTAD)

Long-Term Athlete Development model is originally from Canada. LTAD aims to answer question about what to do in different phases of human development so that every kid would have the opportunity to participate and commit to a life-long health enhancing physical activity. Three objectives for the model are enhancing physical skills, adding physical activity and enhancing sports related skills. (Balyi, I., Higgs, C., & Way, R. 2013, 1-2)

Long-Term Athlete Development model has seven different stages (Figure 14) which are meant to give guideline to participation, exercise, competition and recovery step by step all the way from childhood to adulthood. Key is to remember that moving from one stage to another is based on athlete development instead of chronological age. (Keisala 2015, Lundman 2018).

Stage	Age
Active Start	0-6 year old boys and girls
FUNDamentals	6-9 years old boys & 6-8 years old girls
Learn to Train	9-12 years old boys & 8-11 years old girls
Train to Train	12-16 years old boys & 11-15 years old girls
Train to Compete	16-23 years old boys/men & 15-21 years old girls/women
Train to Win	Men 19 years old +/- & Women 18 years old +/-
Active for Life	No specific age

Figure 16. Seven stages of Long-Term Athlete Development. (Balyi 2013).

4.1 FUNdamentals

The main aim during the FUNdamental stage is to learn fundamental moving skills, which will become cornerstones for learning sport-specific skills. Fundamental moving skills that should be learned during this stage are for example, turning, stopping, pushing, spinning, walking, running, and many more. Also it's vital to learn some sport-specific skills for example kicking, if the fundamental skill of skating is not learned during this stage, individual will face great challenges learning any of sport-specific skills that involve kicking. At this stage it's important to take part in various physical activities. (Lundman 2018, Wusu 2013, Koskinen 2012)

At fundamental stage children are naturally drawn into the sport out of their own interest. For coaches during this stage it's crucial to make practices fun and enjoyable for children, and introduce basic rules and ethics of the sport. Time in the practice should be used on training the basic movement skills mentioned before. Another important skill to practice at this stage is speed development and focus on agility, coordination and quickness, all of these skills are in the zone of window for accelerated adaption (Balyi et al, 2012, Wusu 2013).

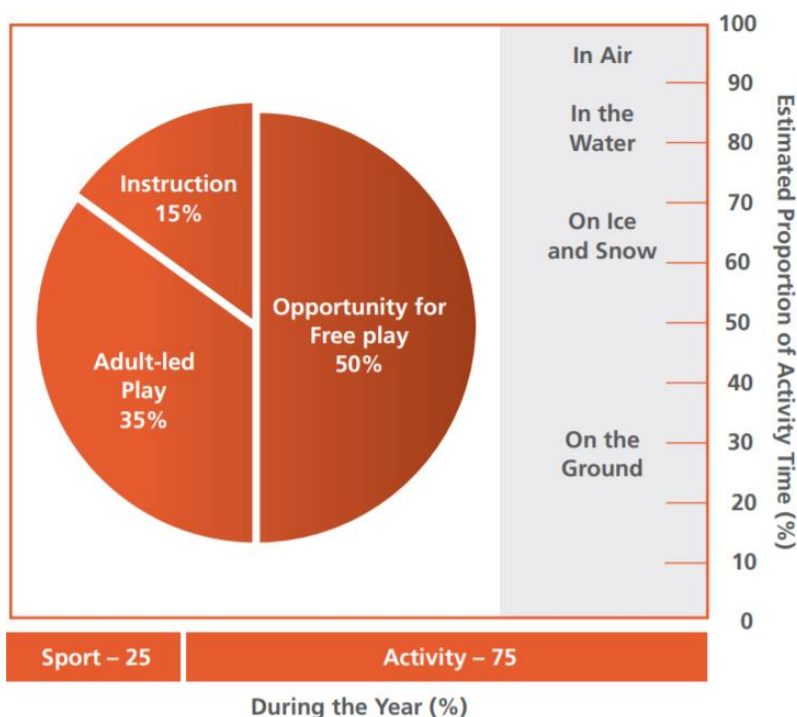


Figure 17. FUNdamentals activity summary (Canadian Sports for Life, 2019)

4.2 Learn to Train

At Learn to Train stage learning fundamental movement and sport skills are crucial towards development in any sports and coaches should emphasize practicing general sport skills and principles of sport. Players move from self-centered to self-critical, and they have a high arousal level during basic skills training. During this phase 30% of time at practices should be competitions. It is highly recommended for child to participate in multiple sports, ideal amount is three different sports. (TSA 2020, Hokka & Sarpola 2019, Balyi et al, 2012)

At this stage, the nervous system is properly developed and children are able to perform processed technical skills. It means that fundamental movement skills must be improved and advanced during this period of time. Children who mature later have a benefit when it

comes to learning skills, due to the fact that their Learn to Train stage lasts longer and in that way the window of accelerated adaption for skill learning stays longer open for them. Window for accelerated adaption during this age period is to train speed and skills. During this stage both genders usually experience growth spurt and training flexibility becomes also increasingly important. (TSA 2020, Lundman 2018)

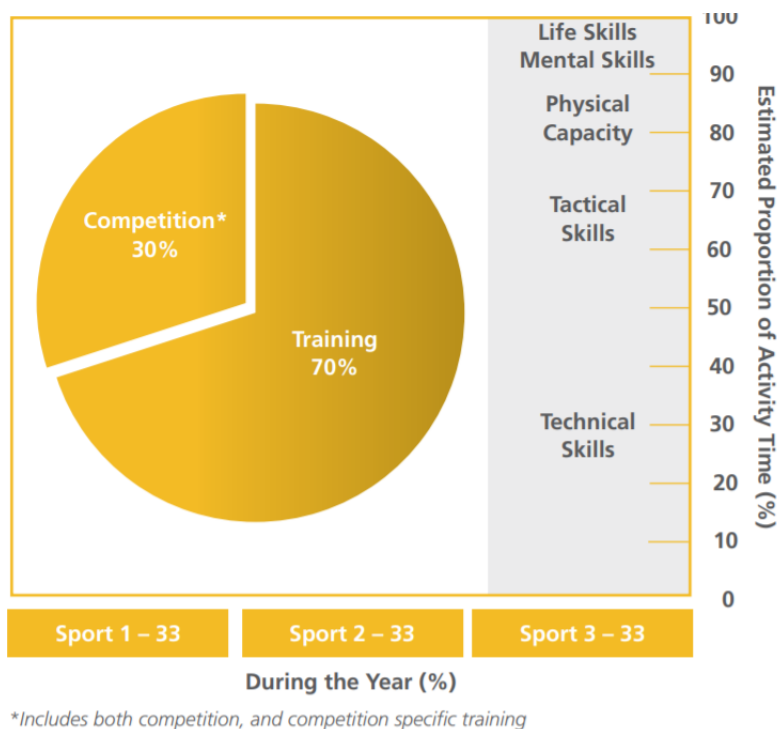


Figure 18. Learn to Train activity summary (Canadian Sports for Life, 2019)

4.3 Train to Train

During Train to Train stage most young athletes from both genders go through puberty. This stage is considered challenging due to the fact that the development process of biological, physiological, sociological, mental and emotional is happening at the same time. During this phase 40% of action should be competing and focus in practices moves on to sport-specific skills. Ideal number of different sports decreases to two. (Lundman 2018, Hokka & Sarpola, 2019)

At this stage physiological functions develop during puberty. Blood volume increases. as well as estrogen and testosterone production, also heart lungs, muscle mass, and fat mass increase rapidly. Peak Height Velocity (PHV) or major growth spurt occurs during this stage of maturation and enables bones to grow first. Due to PHV stress on connective

tissues increases. Flexibility, posture, and technique become very important as these elements can be compromised at this accelerated period of growth. (Lundman 2018, Balyi Way, Higgs 2013, Koskinen 2012)

At Train to Train stage coaches start applying tactics for game situations and practices, these tactics should support game sense. For coaches it's important to keep focus on training fundamental movement skills and technical sport skills. During this stage, skills must be further applied in game environment and situations. Window of accelerated adaptation is to train aerobic, speed, and strength. (Lundman 2018, Koskinen 2012)

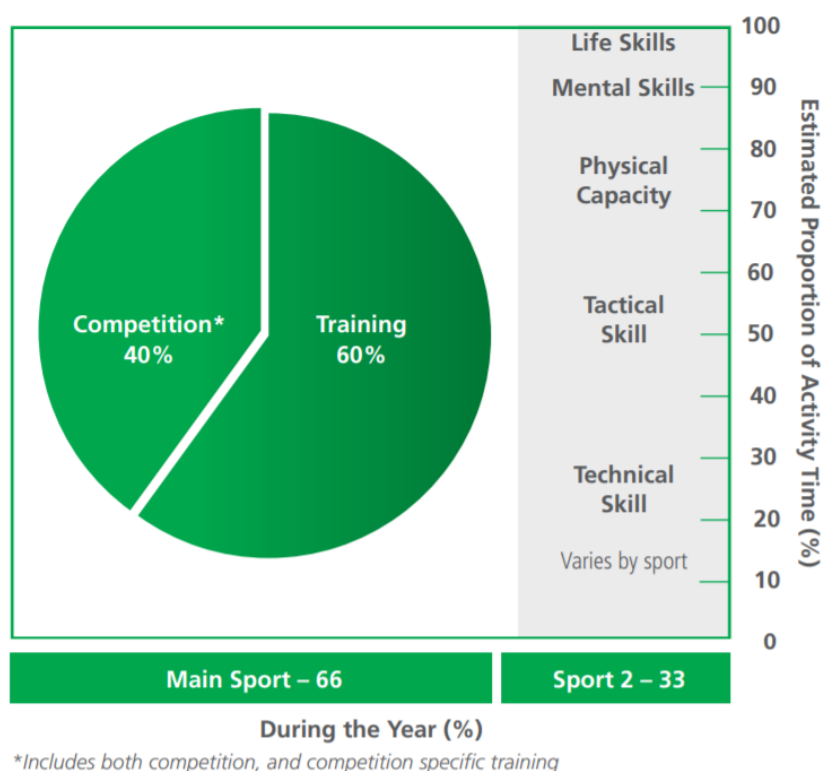


Figure 19. Train to Train activity summary (Canadian Sports for Life, 2019)

4.4 Train to Compete

At Train to Compete stage should have found a balance between training and competing among fundamental movement skills, sport technical skills, strategies and tactics. Athletes should be able to improve and maintain their physical capacities and to improve technical, tactical, and playing skills. During this stage athletes start to take leaps toward specialization in one sport, if athlete wants to do multiple sports one sport should be the main sport and others are just hobbies. (Lundman 2018, Keisala 2015)

When arriving Train to Compete stage athletes enter this stage based on individual commitment, volume and intensity of training and performance results as well as having achieved all the objectives of the Train to Train stage. Athletes start to match their style of playing the game into their physics. For example some ice hockey players may use their size and power to play the physical game, which is based on playing without a puck. Whereas, other players may base their game on great puck management skills and skating abilities. (Lundman 2018, Canadian Sport for Life 2019)

For coaches during Train to Compete stage it's important to plan practices so that 60% of the time used are competitions or preparing for competition. Each athlete should have their own practice plan based on maturity and physical capabilities based on tests performed. Practices should be based on competitive conditions (Canadian Sport for Life 2019)

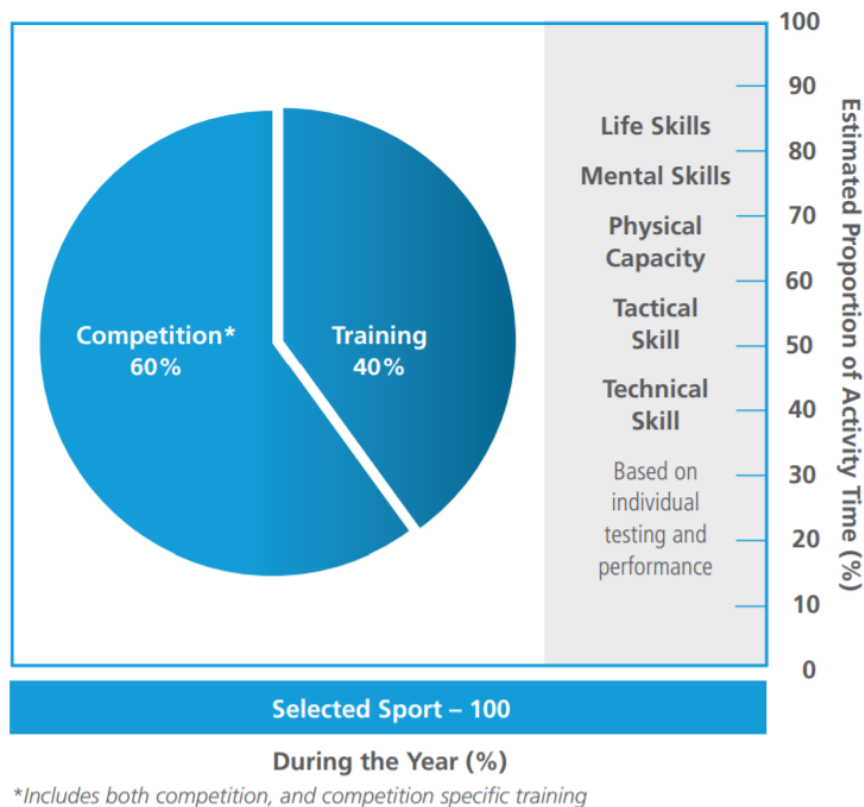


Figure 20. Train to Compete activity summary (Canadian Sports for Life, 2019)

5 Project Objective

Aim of this thesis was to add knowledge for Koovee Ice Hockey juniors, parents, and coaches about athletic lifestyle and what does it include by creating a guidebook. Goal was to generate a guidebook that is easy to understand and read.

Idea for making a guidebook for coaches and players of Koovee ice hockey came with identifying the lack of knowledge on how to live everyday basis like an athlete. Being at the rink is crucial for player development but it's just a small part of an athletes day

Objective of the thesis was to raise awareness on what should happen outside the hockey rink and generate a clear guidance for young athletes and their parents. For coaches guidebook was meant to be a material bank that could be used in long-term while working with young athletes both at the rink and outside the rink.

Besides these objectives goal was to raise awareness on how important it is for young athletes to live an athletic lifestyle in order to reach maximal potential as an athlete. With this guidebook young athletes, their parents and coaches have understanding on what it demands to be an athlete.

6 Stages of the project

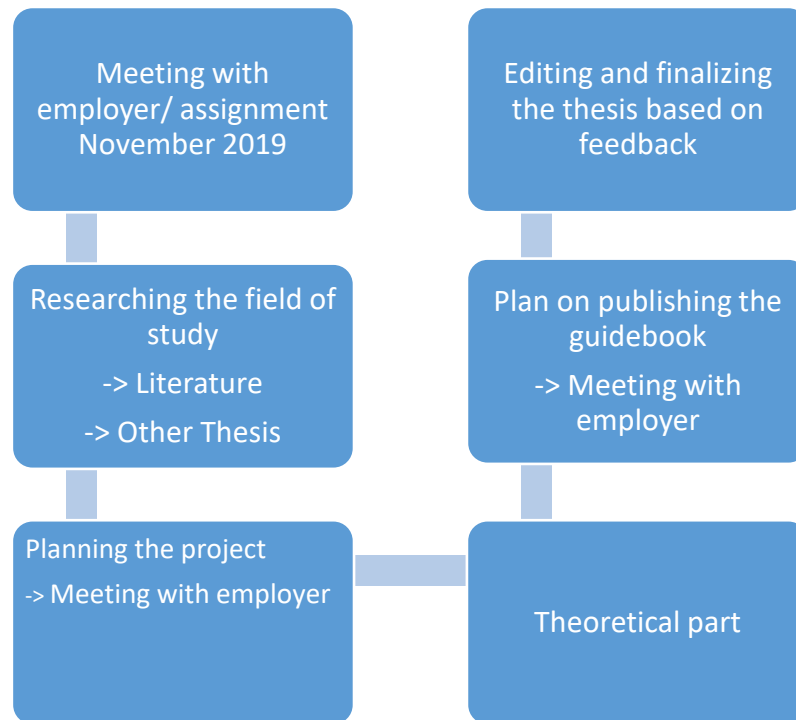


Figure 21. Stages of the Project

At the meeting with employer were representative of KooVee Ice Hockey and creator of the thesis. At the meeting both parties shared their opinions about the guidebook and outlines were set. Wish from employer was to generate a clear guidebook based on facts. Also target group was set at the initial meeting.

After the initial meeting with employer started the phase of researching the field for similar studies. After finding similar studies it was time to add knowledge of the subject and find trustful sources.

After the meeting with employer and directing teacher project plan was set. Project plan was based on earlier researches of the subject. Aim of the project plan was to create a guideline to follow during the process of making the thesis.

After theoretical part, first version of the guidebook was sent to employer and plan on publishing and translating the guidebook into Finnish was set. Also modifications to the guidebook were discussed as well as how to implement the final product into Koovee Ice Hockey.

7 Results of the project

Result of this project is a thorough manual for young athletes, parents and coaches on athletic lifestyle. For young athletes and their parents this guidebook brings knowledge on how grow as an athlete. For coaches this guidebook adds knowledge on how to raise athletes. Also for coaches this guidebook adds knowledge on how to create practices and what are the key points for practicing at different age levels. This guidebook will be translated into Finnish and published in Koovee Ice Hockey webpages.

The theoretical part of this thesis includes general information on the most crucial factors about living like an athlete. Theoretical part was divided into two main segments, Athletes way of life and Long-Term Athlete Development. The Athletes way of life segment provides information of young athletes nutrition, sleep & rest, recovery and time management & life control. The nutrition part provides thorough and broad information about the essential factors in athletes life. The Long-Term Athlete Development segment provides information of different stages in young athletes path towards adulthood.

8 Discussion

Objective for the thesis was to produce a useful guidebook for KooVee Ice Hockey players, parents and coaches. The guidebook covers the most essential basic information needed in order to live like an athlete. Choosing the subject for this thesis came from discussions with the employer and out of my own interest.

Interest for this subject came from acknowledging the lack for athletic lifestyle and what it means among the juniors of the organization. Information about athletic lifestyle can be found but there is a lack of information and knowledge when it comes to how to live like an athlete, including life control and time management. Life control and time management are huge factors in young athletes path to the elite level, young athletes has to fit in school, friends, nutrition, resting, exercising and other stuff to a tight timetable. I Feel like this is overwhelming for the youth, and that's why I believe that this guidebook helps them and their parents and coaches to achieving high level athlete status. Also parental influence is an important sport mechanism and has an impact on youth sport involvement. (Concalves, Domingues 2013)

During the process of making this guidebook various Finnish and international sources were used. The sources that were used were from two decades (2000-2020). The field of study has been studied quite a lot recently and there was plenty of information to be found. Also a few other thesis in the past years have been made with similar objectives.

The continuation of this project moving forward is to bring in more advanced and updated information and gather feedback from the readers. It would also be interesting to find out about more sport specific information and compose a manual based purely on ice hockey. Implementing the thesis to organization participants in everyday life is challenging, plan is to publish the product in KooVee Ice Hockey webpages and possibly give lectures for the player, parents and coaches of the organization.

In general, thesis gave a better understanding of what it demands to be an athlete and how to help players on becoming more athletic. Also objective is that the final product adds knowledge and discussion about how important it is to be an athlete and have an athletes way of life in order to reach each individual maximal potential.

References

- Balyi, I., Higgs, C. & Way, R. 2013. Long-term athlete development. Human Kinetics. United States of America.
- Becker, W. 2004. Nordic Nutrition Recommendations 2004- Integrating nutrition and physical activity. Nord 2004:13, Nordic Council of Ministers, Copenhagen.
- Burke, L. M. 2000. Dietary Carbohydrates. Maughan, R.J. Nutrition in sport. Blackwell Science Ltd.
- Domingues, M., Goncalves, C. 2013. The Role of Parents In Talented Youth Sport. Does Context Matter?
- Canadian Sport for life. 2019. Long-Term Development Stages. Legible: <https://sportfor-life.ca/long-term-development/>. Read: 31.3.2020
- Finni, J. & Tarvonen, S. 2018. Urheilullinen elämänrytmi. Legible: <https://www.kasvaurheilijaksi.fi/el%C3%A4m%C3%A4nrytmitesti/esittely/urheilullinen-el%C3%A4m%C3%A4nrytmi>. Read: 21.2.2020
- Finnish institute for health and welfare. Fineli. Elintarvikkeiden koostumustietokanta. Versio 20. Helsinki 2009. <http://www.fineli.fi>
- Hakkarainen, H. 2015. Harjoittelu, ravinto ja lepo – kehittymisen kulmakivet. Teoksessa Suomen valmentajat (toim.) Lasten ja nuorten hyvä harjoittelu. Lahti: VK-kustannus Oy, 91–97.
- Haymes, E.M. 1991. Vitamin and mineral supplementation to athletes. Int. J. Sport Nutrition 1:146
- Hiilloskorpi, H. & Harjanne, L. 2016. Ravitsemusvalmennus osana urheilijan urapolkua. Teoksessa A. Mero, A. Nummela, S. Kalaja & K. Häkkinen (toim.) Huippu-urheiluvalmennus: Teoria ja käytäntö päivittäisvalmennuksessa. Lahti: VK-kustannus Oy, 159–163.
- Hiltunen, J. & Laitila, J. 2018. Leiritysmallinen urheiluyhäkoulutoiminta urheilijaksi kasvamisen tukena. Tapaustutkimus Lapin yläkouluakatemiasta. Readable: <http://urn.fi/URN:NBN:fi:amk-2018112618239>. Read: 1.3.2020
- Hokka, L. & Sarpola, E. 2019. Yläkoulukäisten urheilijoiden psyykkisen valmennuksen abc. Legible: <http://urn.fi/URN:NBN:fi:amk-201903193377>. Read: 1.3.2020
- Ilander, O. 2010. Nuoren urheilijan ravitsemus: Eväät energiseen elämään. Lahti: VK-kustannus Oy.
- Keisala, R. 2015. Nuoren urheilijan kehitystä tukeva harjoitusympäristö – Opas Lahden Uimaseuran Opetusvaiheen uimareiden valmentajille. Legible: <http://urn.fi/URN:NBN:fi:amk-201504295488>. Read: 13.3.2020
- Koskinen, K. 2012. Ice Hockey Coaching Manual for China Pioneers IHC. Legible: <http://urn.fi/URN:NBN:fi:amk-201302072160>. Read: 3.4.2020

Korpela, S. & Sainio, T. 2019. SM-League goal scoring analysis seasons 2013-2014 and 2016-2017 – Before and after blue line rule change. Legible: <http://urn.fi/URN:NBN:fi:amk-201905027239>. Read: 29.1.2020

Laakso, J. 2015. Development of psychological character of an ice hockey player: Handbook for coaches. Legible: <http://urn.fi/URN:NBN:fi:amk-201605178266>. Read: 13.4.2020

Laaksonen, A. 2011. Jääkiekon lajiansalyysi ja valmennuksen ohjelmointi. Legible: <http://urn.fi/URN:NBN:fi:ju-2011041510651>. Read: 30.1.2020

Lundman, N. 2018. Creation of a content proposal for the IIHF Player Development Guide. Legible: <http://urn.fi/URN:NBN:fi:amk-2018121721870>. Read: 28.3.2020

McArdle, W.D., F.I. Katch and V.L.Katch. 2001. Excercise physiology. Fifth edition. Lippincott, Williams and Wilkins.

Mero, A., Nummela, A., Keskinen, K., Häkkinen, K. 2014. Urheiluvalmennus. Jyväskylä: VK-kustannus oy.

Peltonen, O. 2015. Physical profile of Finnish female ice hockey national team between the years 1995-2014. Legible: <http://urn.fi/URN:NBN:fi:amk-2015060312097>. Read: 15.4.2020.

RDA (Recommended Dietary Allowances). 1989. Food and Nutrition Board. Washington DC: National Academy Press.

Rouvali, T. 2014. Jääkiekon lajiansalyysi ja valmennuksen ohjelmointi. Legible: <http://urn.fi/URN:NBN:fi:ju-201405071634>. Read: 30.1.2020

TSA, Toronto Soccer Association. 2020. Learn To Train. Legible: <http://www.torontosoccerassociation.ca/clubsite/?p=16985>. Read: 28.3.2020

Valo 2018, Valtakunnallinen liikunta- ja urheiluorganisaatio ry. Urheilulliset elämäntavat – vanhempainillan vetäjän opas. Legible: https://storage.googleapis.com/valo-production/2016/12/urheilulliset_elamantavat_opas_low.pdf Read: 24.2.2020

Wusu, B. 2013. Player development guidebook for JJK Jyväskylä football club. Legible: <http://urn.fi/URN:NBN:fi:amk-2013052310342>. Read: 27.3.2020

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