YOUNG ATHLETES' PERCEPTIONS OF COACHES' HEALTH PROMOTION ACTIVITY

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ABSTRACT

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Background. Sports club participation is common in Finland and 62% of all the 11-15 year -old adolescents participate in sports club activities on regular basis. (Blomqvist et al 2018). Since sports clubs can reach a big part of the adolescents and clubs also do have a great potential in health promotion of young people. (Kokko 2010). Especially coaches are in an essential role regarding health promotion. Research of athletes' perceptions of their coaches' health promotion activity has shown, that there is a place of improvement in coaches' health promotion activity (Kokko 2010, Van Hoye et al 2016). The aim of this study was to investigate the athletes' perceptions of coaches' health promotion activity and to see, if there are any differences between the perceptions of athletes of different genders, single- and team sports, different sport disciplines and athletes doing sport on different levels.

Methods. In total 670 sports club participants, (382 males, 288 females), aged 14 -16 years participated in the study. The study was a part of Health promoting sports club study (HPSC) and the data for the study was collected with help of online surveys. The results were analyzed with the help of descriptive statistics, correlation tests (Pearson), crosstabulation chi-square test and Kruskall-Wallis test.

Results. Overall, athletes perceived their coaches promote most often sleep and rest 68.2% of athletes perceiving their coach promotes this topic often followed by nutrition (47.6%) and active lifestyle (45.5%). No differences between perceptions of different genders, between single- and team sports or different sport disciplines was found. Differences were though found between athletes doing sports on different levels. Finnish championships level athletes perceived their coach to promote significantly more often active lifestyle and nutrition than the regional level ($p < 0.001$) and local level/non-competing ($p < 0.05$) athletes perceived. Finnish championships level athletes also perceived their coach to promote significantly more often sleep/rest than regional level ($p < 0.001$) and local level/non-competing ($p < 0.001$) athletes perceived. Further on, the other national level athletes perceived their coach to promote more often nutrition ($p < 0.001$) and sleep/rest ($p < 0.001$) than the local-level/non -competing athletes did. Finally, the regional level athletes perceived their coach to promote more often sleep/rest than the local level/non-competing athletes did ($p = 0.012$). There was also found correlations between the perceptions of active lifestyle and nutrition promotion ($r = 0.70$, $p < 0.001$), between nutrition and sleep/rest promotion ($r = 0.65$, $p < 0.001$) and between physically active lifestyle and sleep/rest promotion ($r = 0.59$, $p < 0.001$).

Conclusions. The main findings of the current study were, that the athletes seem to be divided into two equally big groups: Those, who receive health guidance from the coach and those, who do not. About half of the athletes perceive, that coaches promote often about health-related issue and the other half of the athletes perceive, that their coach never or only seldom promotes health issues. Further on, athletes competing on high level received more often health promotion than those competing on lower level. Differences in perceptions between athletes of different genders and athletes of different sports was on the other hand not found. Therefore, all coaches but especially the coaches working with athletes in recreational clubs or with non-competing athletes could pay more attention on their health promotion activity. Since there are specific athlete groups with known risks to develop health problems (eg.eating disorders) also gender and sport specific health promotion could be done more frequently by coaches.

Keywords. Health promotion, coach, athlete, active lifestyle, nutrition, sleep, rest, sports club

TIIVISTELMÄ

Ruostekoski, Anni. 2019. Nuorten urheilijoiden kokemukset valmentajan terveydenedistämis-aktiivisuudesta, Liikuntatieteellinen tiedekunta, Jyväskylän yliopisto, Liikuntapedagogiikan pro gradu-tutkielma, 51s.

Johdanto. Suomessa urheiluseuraharrastaminen on nuorten keskuudessa suosittua ja 11-15 vuotiaista nuorista 62% harrastaa aktiivisesti urheilua seurassa (Blomqvist ym 2018). Koska seurat tavoittavat suuren osan nuorista, on niillä myös otollinen asema terveyden edistämisessä (Kokko 2010). Etenkin valmentajien rooli on keskeinen nuorten urheilijoiden terveyden edistäjinä, mutta aiemmat tutkimukset ovat osoittaneet, että valmentajilla on parantamisen varaa terveydenedistämis aktiivisuudessa. (Kokko 2010, Van Hoye ym 2016.) Tämän tutkimuksen tarkoitus oli selvittää nuorten urheilijoiden näkemyksiä valmentajien terveydenedistämisaktiivisuudesta. Tarkoitus oli myös tutkia, onko eri sukupuolta edustavien urheilijoiden, yksilö- ja joukkuelajien, eri urheilulajien ja eri tasolla urheilevien urheilijoiden näkemyksissä eroja.

Menetelmät. Tutkimukseen osallistui yhteensä 670 (382 miestä, 288 naista) urheiluseurassa urheilevaa 14 - 16 -vuotiasta nuorta**.** Tutkimus oli osa laajempaa Terveyttä Edistävä Urheiluseura (TELS) tutkimushanketta ja tutkimuksen tiedot kerättiin nettikyselyn avulla. Vastaukset analysoitiin korrelaatiotestin (Pearson), ristiintaulukoinnin, khiin neliötestin sekä Kruksall-Wallisin testin avulla.

Tulokset. Urheilijoiden vastausten perusteella valmentajat näyttivät olevan aktiivisimpia edistämään riittävää unta ja lepoa: 68,2% urheilijoista oli sitä mieltä, että valmentajat puhuvat usein unen/levon tärkeydestä. Seuraavaksi useimmin puhuttiin ravinnosta (47,6%) ja kolmanneksi eniten aktiivisen elämäntavan tärkeydestä (45,5%). Sukupuolten, yksilö- ja joukkuelajien ja eri urheilulajien urheilijoiden kokemusten välillä ei ollut eroja valmentajan terveydenedistämisaktiivisuuden suhteen. Sen sijaan eri tasoilla urheilevien urheilijoiden kokemuksissa löytyi merkitseviä eroja. SM- tason urheilijat kokivat, että heidän valmentajansa edisti merkitsevästi useammin aktiivista elämäntapaa ja ravintoa kuin aluetason ($p < 0.001$) ja paikallistason/ei-kilpailevat ($p< 0.05$) urheilijat kokivat. Lisäksi SM- tason urheilijat kokivat, että heidän valmentajansa puhui merkitsevästi useammin unesta ja levosta kuin aluetason ($p< 0.001$) ja paikallistason ($p< 0.001$) urheilijat kokivat. Muun valtakunnallisen tason urheilijat puolestaan kokivat, että heidän valmentajansa puhui merkittävästi useammin ravinnosta ($p<0.001$) ja unesta/levosta ($p< 0.001$) kuin paikallistason/ei-kilpailevat urheilijat kokivat. Lisäksi aluetason urheilijat kokivat, että heidän valmentajansa puhui merkittävästi useammin unesta ja levosta kuin paikallistason/ei-kilpailevat kokivat ($p = 0.012$). Lisäksi urheilijoiden kokemuksissa löytyi merkitseviä korrelaatioita aktiivisen elämäntavan ja ravinnon ($r = 0,70$, $p < 0.001$), ravinnon ja unen/levon ($r = 0,65$, $p < 0.001$) ja aktiivisen elämäntavan ja unen/levon ($r = 0,59$, $p < 0.001$) edistämisen suhteen.

Johtopäätökset. Tutkimuksen päätulosten mukaan urheilijat tuntuvat jakautuvan kahteen yhtä suureen ryhmään: Niihin, jotka saavat terveyskasvatusta valmentajalta ja niihin, jotka eivät saa**.** Korkeammalla tasolla urheilevat urheilijat näyttävät saavan useammin terveyskasvatusta verrattuna matalammalla tasolla urheileviin. Johtopäätöksenä voidaankin todeta, että kaikkien valmentajien, mutta etenkin alemmalla tasolla valmentavien, pitäisi keskittyä laajaan ja monipuoliseen aktiivista elämäntapaa, ravintoa ja unen/levon tärkeyttä edistävään terveyskasvatukseen. Koska jotkin urheilijaryhmät ovat alttiimpia tietyille terveysongelmille (esim. syömishäiriöt), pitäisi valmentajien etenkin näiden urheilijaryhmien kohdalla kiinnittää enemmän huomiota erityisiin terveyskasvatuksen kysymyksiin, kuten esimerkiksi juuri syömishäiriöille alttiimpien urheilijoiden kohdalla ravitsemukseen.

Asiasanat. terveyden edistäminen, valmentaja, urheilija, liikunnallinen elämäntapa, ravinto, uni, lepo, urheiluseura

ABBREVATIONS

HPSC	Health Promoting Sports Club
HBM	Health Belief Model
IHUPE	International Union for Health Promotion and Education
IOC	International Olympic Committee
LIITU	National survey on the Physical Activity Behaviors of Children and Adolescents in Finland
NNR	Nordic nutrition recommendations
THL	National institute of health and welfare
WHO	World Health Organization

CONTENTS

INTRODUCTION

In today's modern world, a sedentary lifestyle, bad nutrition and obesity are among several factors, that contribute negatively to the health of young people (WHO Global Health risks, 2009). According to the newest results of the national survey on the Physical Activity Behaviors of Children and Adolescents in Finland (LIITU 2018), Only about one third (37%) of the children and adolescents aged 9-15 meet the recommended guidelines of daily physical activity (Kokko et al 2018). At the same time the research results indicate, that the eating habits of Finnish youth could be better and they could also sleep more (THL School Health survey, 2017). These same health behavior trends are also present in young athletes' lives. A research done among Finnish sport school students (age 13-14) revealed, that 43% of the sport school students do not reach the daily physical activity recommendations. (Porttikivi & Suoraniemi 2018.) The nutritional issues among athletes in turn seem often to be related to energy and micronutrient deficiencies (Galanti et al 2015) and improper knowledge of proper nutrition (Heikkilä et al 2018). Sleep is also an essential part of young athletes' health and affects the sport performance for example from the recovery point of view. Studies made with young athletes show, that there are still a lot of athletes who could sleep more. (Hrozanova et al 2018, Mäkelä et al 2016.)

Sports club participation is common in Finland and 62% of all the 11-15 year- old adolescents participate in sports club activities on regular basis (Blomqvist et al 2018). Since sports clubs can reach a big part of the adolescent population and the nature of the club participation is voluntary, clubs therefore do have a great potential in health promotion of young people. Generally, sports clubs also have positive attitudes to health promotion, but still health promotion is something that is not yet an obvious and natural part of coaching practice in sports clubs. (Kokko 2010.) Research of athletes' perceptions of their coaches' health promotion activity has most widely been done among young male- athletes and the results show, that there could be a place of improvement from the athletes' perspective in coaches health promotion activity (Kokko 2010, Van Hoye et al 2016). The most often promoted health topics are those closest related to sport performance like risks of being physically active when ill, injury prevention and sleep/rest while for example guidance related to nutrition is not as common (Kokko 2010).

The coach has an important and special role in young athletes' life. A coach is often more than just a coach; he or she can be as close as a family-member, a role-model, someone who an

athlete can trust, someone who listens and cares about the athlete more than just from the athletic performance perspective. (Hämäläinen 2003.) Therefore, the coach also can have a lot of influence on a young athletes' behavior including health behavior. Still, coaches also do struggle with their role both as sport performance enhancers and as educators and mainly the feeling of lack of knowledge can be one barrier that prevents the coaches to implement health promotion in their coaching practice (Bratland- Sanda & Sundgot – Borgen 2013). For the health promotion to be effective, it should be carefully targeted for the specific group.and its needs (Glanz et al 2002, 13). Therefore, it is also of great importance for coaches to know, what kind of health -related topics their athletes deal with.

As mentioned above, earlier studies have compared the self -reported health promotion activity of club coaches' and young male athletes' perceptions of their coaches' health promotion activity (Kokko 2010, Van Hoye et al 2016) and the coaches' health promotion activity and perceptions of young athletes what comes to substance use (Ng et al 2017). However, there are no studies directly investigating the health promotion activity of club coaches in the perception of both young male and female athletes participating in club sports activities in Finland. There is also a lack of research what comes to comparison of the perceptions of males and females, individual and team sports, different sports disciplines and athletes competing on different levels what comes to athletes' perceptions of coaches' health promotion activity.

Since there have been shown to exist differences in the perceptions of a coach- athlete relationship between the single and team sport athletes (Rhind et al 2012) it is also important to investigate whether there are differences also between the single- and team sport athletes' perceptions of their coaches' health promotion activity. The information of coaches' health promotion activity perceived by different genders, single- & teams ports athletes and athletes from different sports could help the clubs to tailor and adapt their health promotion activities to the specific target group. The adapted and specific health promotion has argued to be very important for a health promoting sports club to become as effective as possible (Geidne et al 2013).

In conclusion, it is important to investigate, how do the adolescents involved in sports club activities perceive the health promotion activity of the coaches what comes to active lifestyle, nutrition and sleep/rest. It is also important to know, are there any differences in the perceptions of girls and boys, between team & single sport and different sports. With the help of these results, the clubs and coaches can be informed of their specific needs in health promotion depending on the needs of their athletes and sport.

1 HEALTH BEHAVIOR OF ADOLESCENTS: PHYSICAL ACTIVITY, NUTRITION AND SLEEP

Health behavior on individual level can be defined as personal attributes such as beliefs, expectations, motives, values, perceptions and other cognitive elements, personality characteristics, behavior patterns, actions and habits that relate to health maintenance and health improvement (Glanz et al 2002, 11). When talking about health behavior and health, physical activity, diet and sleep are factors, which are often taken into discussion. There is strong and consistent evidence of the numerous health benefits of physical activity for children and youth (Janssen & LeBlanc 2010). The same is even true for a well-balanced diet (Purcell 2013) and sleep (Tarokh et al 2016). In the following chapter, the importance and health benefits of physical activity, proper nutrition and adequate amounts of sleep in childhood and adolescence will be discussed. Furthermore, the guidelines and current health behavior especially in the areas of physical activity, nutrition and sleep among children and youth in Finland and worldwide will be reviewed.

1.1 Physical activity: Recommendations and health benefits

There is strong and consistent evidence of the numerous health benefits of physical activity and a physically active lifestyle for children and youth. The global recommendations on physical activity for health set by World Health Organization (WHO) state that children aged 5-17 years should accumulate at least 60 minutes of moderate to vigorous intensity physical activity daily and amounts greater than this will provide additional health benefits. (WHO 2010, Janssen & LeBlanc 2010.) The Finnish recommendations of physical activity for youth aged 13-18 years states, that youth should be physically active at least 60 min during the day and half of this amount should be moderate to vigorous activity. Besides the physical activity recommendation, the Finnish recommendations also states, that long periods of sitting (> 2h) should be avoided and usage of media and screen time should be limited to a maximum of two hours daily. (Tammelin & Karvinen, 2008.)

Based on their review, Janssen & LeBlanc (2010) emphasized the importance of vigorous intensity activities and strongly underlined, that vigorous activities should be incorporated in the daily physical activity when possible, including activities that strengthen muscle and bone. This is because of the additional and more consistent health benefits of moderate to vigorous physical activity compared with low intensity physical activity. (Janssen & LeBlanc 2010.)

Besides aerobic moderate to vigorous intensity activities, also resistance training and other high-impact activities like jumping should be incorporated at least 2 or 3 days of the week to ensure the optimal bone health (Janssen & LeBlanc 2010).

In their review article, Janssen & LeBlanc (2010) examined the health benefits of physical activity and fitness in school-aged children and youth. In their review, they used 7 health indicators to examine the health benefits of physical activity. These indicators were blood lipid profile, blood pressure, bone mineral density, metabolic syndrome, overweight and obesity, depression and injuries. Based on the results of their review, physical activity showed out to be beneficial for the blood lipid profile, blood pressure and bone mineral density. (Janssen & LeBlanc 2010.) Furthermore, adequate amounts of physical activity in childhood and adolescence showed out to reduce the risk for metabolic syndrome, overweight and obesity and depression. Only the risk for injury was higher for the physically more active children and adolescents than inactive children and adolescents. (Janssen & LeBlanc 2010.)

Further on, it has been shown that higher levels of cardiorespiratory fitness in childhood and adolescence have a connection with a healthier cardiovascular profile also later in life and better muscular strength is negatively associated with overweight and overall adiposity. Also, a healthier body composition in childhood and adolescence is associated with a healthier cardiovascular profile later in life and lowers also the risk of death. (Ruiz et al 2009.) Since physical activity affects strongly the cardiorespiratory fitness, a physical active lifestyle in young age can thus affect the physical health also in later life.

Too small amounts of physical activity and increased sedentary behavior can also affect the health of musculoskeletal system. Among the Finnish youth aged 14-16 years it has been shown, that higher levels of screen time (computer games, TV/DVD, phone, Internet) during leisure-time increased the odds of neck and shoulder pain in boys and low back pain in boys and girls. (Rossi et al 2016.) In summary, the health benefits of physical activity of children and youth are convincing; a higher risk of injury seems to be the Only possible negative outcome of physical activity. When comparing the pros and cons of physical activity it can clearly be stated, that the risk of injury is worth to take if one can achieve all the other health benefits by being physically more active.

1.2 Physical activity of Finnish youth and young athletes

According to the newest results of the national survey on the Physical Activity Behaviors of Children and Adolescents in Finland (LIITU), about one third (38%) of the children and adolescents aged 7-15 meet the recommended guidelines of daily physical activity (60 min moderate to vigorous physical activity daily) according to their own subjective estimation. (Kokko et al 2018.) The secondary school aged children and adolescents (age 13-15) were more passive and had higher amounts of sedentary time than the younger children. When 45% of the 9-year old children met the recommendation of 60min of daily physical activity, the number declined to 32% for 13-years old children and further to 19% for the 15-years old children. Similarly, also the moderate-to-vigorous intensity physical activity declined with age. In all the age groups, boys met the daily recommendations of physical activity significantly more often than girls. (Kokko et al 2018.) When comparing the results of physical activity of the year 2018 LIITU survey to the results of the same survey done two years earlier in year 2016, there seemed to be a positive trend what comes to reaching the daily recommendations of physical activity among the children and youth. (Kokko et al 2018.)

However, when the same measurements of daily physical activity were done objectively with accelometers, the results were not as positive as the results from the estimated physical activity results indicate when comparing the results of 2018 with the results from 2016. The objectively measured results revealed, that Only 19% of the 13-year old children and 10% of the 15-year old children actually reached the recommended daily amount (60min) of moderate to vigorous physical activity. (Husu et al 2018.) These results are showing, that the promotion of children and adolescents physical activity needs to be emphasized and ways to integrate physical activity along the days, especially schooldays, needs to be found.

The situation of children and youth participating in sports club activities is not much better what comes to daily physical activity compared with those not participating in sports club activities. Mäkelä et al (2016) investigated the physical activity, screen time and sleep among the young sports club participants aged 14 -16 years (n = 1200). The results revealed, that sports club participants often are more physically active than the non-sports club participants. Still, only 17.5% of the athlete girls and 30.3% of the boys met the recommendations of 60min moderate to vigorous physical activity daily. Thus, only minor part of the sports club participants met the set daily recommendations of physical activity. (Mäkelä et al 2016.) For a young athlete, a physically active lifestyle should be emphasized to reach the top technical, tactical and

physiological athletic performance. Therefore, it is of great importance, to focus and lay more attention also on the sports club participants' physical activity and health habits especially in coaching. (Mäkelä et al 2016.)

Further on, the amount of daily physical activity among the Finnish sport school students (age 13-14) has also been examined. These results showed, that 43% of the sport school students (n = 212) did not meet the recommendations of 60 min of daily physical activity during a normal week. When comparing boys and girls who did not meet the daily recommendations for physical activity during a normal week, the percentages were 52% for girls and 36% for boys. When comparing the recommended daily amount of physical activity of participants in different sports, 45% of the team sport athletes (n = 123), 39% of aesthetic sport athletes (n = 39) and 26% of individual sport athletes (n = 45) did not meet the daily recommendations of PA every day. (Porttikivi & Suoraniemi, 2018.)

Similar results of sports club participants' physical activity has also been found abroad. Exel et al (2018) investigated the off-training physical activity and sedentary behavior of young athletes and found in their research alarming behavior among high level young athletes what comes to physical activity and sedentary behavior (Exel et al 2018). In their research, Exel et al (2018) studied a group of eight athletes (15.7 ± 2 years) of a sport talent program. The athletes wore accelometers for 15 days and their daily physical activity and sedentary behavior was measured. On the basis of the results, the researchers could identify three different behavioral patterns among the athletes: Balanced (23.7% of the athletes), sedentary (56.9%) and hazardous (19.4%). The sedentary group showed a high amount of daily sedentary behavior (37.37 min/hour) and the hazardous group showed the lowest amount of daily moderate to vigorous physical activity (8.67 min/hour daily). The balanced group on the other hand showed a low amount of daily sedentary behavior (17.20 min/hour) and a high amount of daily moderate to vigorous physical activity (28.61 min/hour). (Exel et al 2018.)

A high amount of sedentary behavior and a low amount of physical activity can among the young athletes both affect the recovery and overall health negatively. The researchers pointed out, that it is of great importance both for the developing athletes and their coaches to recognize the behavioral patterns (PA and sedentary behavior) to maximize the recovery, health and this way also the sport performance of the young athletes. The researchers further discussed, that it would be important to find a good balance of off-training physical activity to promote both health and sport performance. (Exel et al 2018.) Since the daily physical activity of a big part of young Finnish athletes seem also to be inadequate and differences seem to exist both between

genders and different sports (Porttikivi & Suoraniemi, 2018), the promotion of the daily physical activity of young athletes seems to be needed also in Finland. The school day sedentary behavior and sitting is something, that has also been discussed in Finland and this is something that needs to be taken into account and where actions are needed now and in the future.

1.3 Nutritional guidelines for adolescents and young athletes

Proper nutrition and energy intake are important factors for the wellbeing, proper growth and development for a child or adolescent as well as for the sport performance of a young athlete. A well - balanced diet containing suitable amounts of energy, macronutrients (carbohydrates, proteins, fats) and micronutrients (vitamins and minerals) maintains health, optimizes the training effect, enhances recovery and lowers the risk for injury and illness. (Purcell 2013.) The combination of a well - balanced diet and physical activity in childhood and adolescence will promote an enjoyable, health-promoting, and rewarding experience of sport and promote an active lifestyle throughout life (Meyer et al 2007). The daily minimum energy requirements (Kcal/day) highly vary depending on age and activity level, but for 14-16 year-old boys the minimum recommendation of daily energy intake to ensure proper growth and bodily function lies between 2500 – 3000 Kcal and for girls (age 14 -16) about 2200 Kcal/day. (Purcell 2013.) The energy requirement can though be a lot higher when the expenditure of sports and physical activity is taken into account. Not only the energy amount, but also the source of energy is important for a growing and physically active adolescent. Below, the role of the different macronutrients, carbohydrates, proteins and fats in the diet of a young athlete will be discussed.

Cardbohydrates. Carbohydrates are the main fuel for athletes, and this is true both for adults and adolescents. For young athletes, a carbohydrate intake of 4.8 g/kg daily is shown to restore glycogen levels after training and thus optimize performance and recovery. (Meyer et al 2007.) In addition to glycogen store replenishment, slowly digestible and fiber- rich carbohydrates such as wholegrain products, vegetables, berries and fruits are shown to support health and reduce the risk for chronic disease like type 2 diabetes, metabolic syndrome and cancer. It can thus be stated, that the health effect of carbohydrates is linked to the type and source of carbohydrates digested. (Nordic Nutrition Recommendations 2012.) To ensure the adequate intakes of micronutrients and dietary fiber, it is of great importance to limit the consumption of carbohydrates containing high amounts of refined and added sugars. The limitation of these kind of carbohydrates is particularly important among children. Consumption of sugar sweetened drinks and foods has been associated with increased risk of type 2 diabetes and

weight gain as well as dental caries and should thus be limited. (Nordic Nutrition Recommendations 2012.) According to the Finnish nutrition recommendations, no more than 10% of the daily energy intake should be consumed in the form of added sugars. (VRN 2014)

Proteins. For protein, the Finnish nutrition recommendations state, that about 10-20% of the daily energy intake should come from proteins (VRN 2014). For adults, the required amount of protein is about 1,7g/kg body mass and the same recommendation is even true for young athletes. Proteins are essential in repairing and building muscle, hair, nails and skin. In longer duration exercise, the importance of protein as a fuel source rises, but still the carbohydrates and fats remain as the main sources of energy during exercise. (Purcell 2013.) In the largest part of the western countries, the protein intake lands typically higher than the recommendations and thus also young athletes usually meet the required amounts of their daily protein need if their total daily energy intake is adequate. Even among young athletes restricting their caloric intake, usually the protein intake still has been observed to be adequate. (Meyer et al 2007.) Even if protein supplementation seldom is needed among young athletes, the timing of protein intake could play a role for sport performance and recovery (Nordic Nutrition Recommendations 2012).

Fats. Fats, which can be classified as triglyserides, phospholipids or sterols, are a good source of energy thanks to their high energy density. A gram of fat contains 9kcal of energy and it is over a double amount compared with carbohydrates and protein (both contain 4kcal/g). (Illander 2014, 229.) The fats are essential in the nutrition of an athlete: They maintain hormone production and support immune defence, reduce inflammation in the body, help regulating the metabolism and act as a great source of energy to an athlete. A proper energy intake in fact is one of the most essential parts of an athletes' nutrition, since inadequate energy intake can impact recovery negatively and increase the risk of injury. (Illander 2014, 236.) Fats are essential also for the body to be able to absorb fat soluble vitamins. (Purcell 2013.) Fats should cover about 25-40% of the daily energy intake of an athlete. This means about 1-2g/kg/d. Most of the fats in a diet of an athletes should be unsaturated. This means, that they come from vegetable sources (olive oil, nuts and nut oils, avocado). Also, omega 3 fats attained from fish are a good source of fat for athletes. Still, athletes don't need to totally avoid saturated, animal – based fats either, because high amounts of training can compensate the possible health threats (cardiovascular disease, high LDL cholesterol) of saturated fats among athletes. (Illander 2014, 236.)

Vegetables and fruits. Vegetables, root fruits, fruits and berries have a high nutritive value; in other words, they contain a high amounts of micronutrients in comparison with their energy density. Vegetables and fruits are therefore highly valuable nutrition for all people, both for athletes and non-athletes. Vegetables and fruits contain especially high amounts of vitamin C, folic acid, potassium and fibers. In addition, they also act as antioxidants in the body and might therefore have an anti-inflammatory effect. Among athletes, consuming vegetables might lower the inflammation, oxidative stress and muscle damage caused by hard training and in this way speed up the recovery. (Illander 2014, 61.) According to the Finnish nutrition recommendations, daily consumption of vegetables, berries and fruits should be at least 500g which means about 5-6 portions daily (VRN 2014).

Along with the composition of the diet also the eating pattern and timing of the meals plays a great role in healthy nutrition behavior among children and adolescents. To maintain stable level of blood glucose, it is recommended to eat three main meals during a day, and 1-2 snack meals if needed. The main meals often are breakfast, lunch and dinner. (VRN 2014.)

1.4 Eating behavior of Finnish youth and athletes

The health behavior of Finnish youth has been investigated since year 1996 in the School Health survey of Finnish youth (THL 2017). In the newest survey in year 2017, the eating habits have been investigated in several areas including the meal pattern during the day, consumption of vegetables, fruits and berries and consumption of sweets and soft drinks. Among these areas, the eating habits of Finnish youth aged 14 – 18 are slightly worrying. To start with the daily eating pattern, almost 40% of the adolescents aged 14 - 15 years do not eat breakfast every school day. 11% of the same age group stated, that they never eat breakfast. For the 16 – 17 year old college students, the numbers are slightly better but still, almost 30% of all students skip breakfast some mornings and 8% never eat breakfast during schooldays. (THL 2017).

What comes to school lunch, 68% of the adolescents aged 14-15 years stated, that they eat the main course every day during school lunch. Among older students (age 16 – 17) the number was slightly better reaching 77% students eating the main course every school day at lunch. Those who stated salad and vegetables being a part of their school lunch every day reached 43% for the younger (age 14 -15) and 52% for the older (ages 16 -17) adolescents. (THL 2017) Finally, the daily consumption of sweets and soft drinks was also investigated. The daily consumption of sweets and soft drinks was highest among the youngest (age 14) boys and boys in the vocational education (age 17). In both groups, about 10% of the boys stated, that they

consume sweets and soft drinks every day. For girls, the numbers were slightly lower in all the age groups college girls having the lowest rate (7.3%) of everyday sweet and soft drink consumption. (THL 2017.)

What comes to the nutrition of young athletes in Finland, the research of this area is scarce and currently no proper research is available. Research of eating habits of young athletes has though been done abroad showing, that the main problems of the nutrition of young athletes seem to be related to energy intake and micronutrients. One example of recent research of young athletes' nutrition is a research from Galanti et al (2015), who investigated the dietary habits of young athletes (age 14 -16) in two different sports: Cycling (n = 17) and Soccer (n = 30) by using a questionnaire. The results showed, that the daily energy intake was similar between the groups (2630 kcal/day for cyclists and 2844 kCal/day for soccer players) and in both groups lower than recommended. The results also showed, that the daily intake of the calcium, vitamin B6 and Folic Acid was lower than recommended. (Galanti et al 2015.)

Unfortunately, often the eating habits of young athletes follow more frequently public trends than national guidelines or nutrition guidelines for athletes (Meyer et al 2007). Therefore, proper guidance and nutritional recommendations from a coach might play a great role in teaching the young athletes a healthy and sustainable eating behavior. In their study, Heikkilä et al (2018) investigated the nutrition knowledge of young athletes and their coaches in Finland. It showed out, that coaches generally had a higher knowledge of proper athlete nutrition than their athletes (81% vs. 73% respectively). In the study, the most difficult parts of the athlete nutrition seemed to deal with the food supplements, quality of carbohydrates and protein needs of an athlete. (Heikkilä et al 2018.) These results further support the statement of Meyer et al (2007) which says, that the public trends have a strong influence on the young athletes' nutrition.

Another worrying issue connected to especially adolescent athletes and nutrition are eating disorders among young athletes. Adolescence is a period of both physical and psychological changes and many young athletes might struggle both with low self-esteem and body image problems. Thus, adolescent athletes might be extra vulnerable to develop eating disorders. Adolescence is also a period, when young athletes start to take their sport and training more seriously, and this also might heighten the risk of developing eating disorders when aiming both for the perfect athlete body and performance. (Martinsen 2015.) Studies show, that especially young female athletes in endurance and aesthetic sports are at higher risk to develop an eating disorder (Bratland-Sanda & Sundgot-Borgen 2013).

In summary, there are a lot of things that Finnish adolescents and young athletes could do better what comes to nutrition. Among non-sporting 14-18 year old youth, maiFCLy the eating patterns (breakfast and school lunch) as well as consumption of vegetables could be better and higher. The most worrying group what comes to eating behavior are those studying in vocational education, especially boys. Among young athletes, the main problems seem oto be inadequate energy intake, iron and calcium deficits (Meyer et al 2007) and improper knowledge of adolescent athlete nutrition (Cotugna et al 2005, Meyer et al 2007) The inadequate energy intake problems and eating disorders tend to be particularly common among girls participating in endurance and aesthetic sports (Bratland-Sanda & Sundgot-Borgen 2013). Taking these findings and statements into account the proper nutrition promotion of coaches of young athletes seems to be of great importance and should be emphasized.

1.5 Sleep in adolescence

Sleep is extremely important for the developing brain and particularly childhood and adolescence are important time periods for brain development. Sleep has been shown to affect both brain development, learning and memory as well as emotion regulation and behavior. Since sleep can affect both emotion regulation, attention, memory and learning, it also has a connection with mental health. (Tarokh et al 2016.) The recommendations of a suitable amount of sleep per night for young people and young athletes lie somewhere between 8.5 – 9.5h/night (Bergeron et al 2015, Tarokh et al 2016). For athletes, getting enough sleep is also essential to peak the athletic performance. Sleep has been found for example to influence speed, accuracy, and reaction time. It is also suggested that athletes may require more sleep than non-athletes of the same age. (Holly & Engel, 2016.)

Adolescent sleeping patterns are guided by two major factor areas: Intrinsic factors and external factors. The intrinsic factors consist of biological patterns and physiology and the extrinsic patterns again of external factors like environment, school and social factors. (Graham 2000.) The internal factors can further be divided into two different types: The biological timing system also known as the circadian rhythm and the sleep/wake homeostasis-system. The sleep/wake homeostasis system stays in balance when one gets enough sleep, but if a sleep deprivation occurs then simply more sleep is needed. Proper amount of sleep is therefore an amount that satisfies the homeostatic process, in other words, is not associated with daytime sleepiness. (Graham 2000.)

During adolescence, both intrinsic factors and external factors do alter and play a great role in sleeping habits of young people. The circadian rhythm is shifted forward by several hormonal and neurological changes in the adolescent body. This means, that adolescents naturally have later bed times and awake times. But along the natural intrinsic shift of circadian rhythm, also many external factors affect the sleep and these factors might lead to insufficient amounts of sleep. Early school mornings, social media, caffeine consumption and screen time are among factors that strongly affect the adolescents sleep patterns. (Graham 2000.)

A sleep deprivation among adolescents caused by different kinds of factors, say being internal or external, can have many consequences both for overall health, academic performance and athletic performance. Attention, emotional behavior and memory might be affected, and they might have consequences both for academic as well as for the athletic performance. Also, the injury risk is higher among young athletes if they don't get proper amounts of sleep. (Milewski et al 2014.) For athletes, sleep is essential both for the recovery of the nervous system, replenishment of energy storages in the liver and muscles (glycogen) and proper function of the immune system. Sleep deprivation may also result in alterations in carbohydrate metabolism, appetite, food intake, and protein synthesis. Ultimately these factors can all negatively influence an athlete's nutritional, metabolic and endocrine status leading to poor recovery and potentially reduced athletic performance. (Halson 2016.)

1.6 Sleeping behavior of Finnish youth and adolescent athletes

According to the national Finnish School Health survey (THL 2017) 33.9% of the 14-15 year old adolescents do sleep under 8 hours a night during the school week. The same is true even for the older (16-17 years) adolescents: In the older age group as many as 43% of boys and girls do sleep under 8h during school week. During weekend, the numbers are slightly better showing, that the sleep deprivation during school week is compensated during the weekend. In the younger age group (14-15 years) Only 6.7 % of the boys and girls do sleep under 8h per night. The number is even lower for the older age group (4,7 %). THL 2017.) The numbers on the sleep hours indicates the fact that was discussed in the chapter above: The early school start times might play a role in the amount of sleep the adolescents gain during the school week since the amount of sleep is much higher during the weekend.

What comes to young athletes in Finland, the sleeping hours are slightly better when compared to those not taking part in sports club activities. Mäkelä et al (2016) compared the sleep hours

of 14-16 year- old sports club participants (n = 1200) to non – sports club participants in the same age (n = 913). According to the results, 21.7% of the girls and 18.7 % of the boys taking part in sports club activities every week slept under 8 hours every night. For non-participants, the amount of girls sleeping under 8 hours per night during school week was 29.9% and for boys 32.7%. (Mäkelä et al 2016.) Even if the situation is slightly better for adolescents taking part in sport activities compared with non-sports club participants what comes to sleep, the importance of sleep also during the school week should be emphasized also among the sporting adolescents. Particularly because there is evidence, that young athletes require more sleep than their non-sporting peers (Holly & Engel, 2016).

Sleep research among junior elite athletes made abroad is showing, that lack of sleep is common, but varies a lot between individuals among young athletes. Hrozanova et al (2018) studied the sleep time and patterns of a group of Norwegian high school aged elite junior cross-country skiing and biathlon athletes (n =31) during and outside the competitive season. The athletes were monitored by using a non-invasive radio ultra-wideband radar technology for sleep monitoring. Their results showed, that total sleep duration was 07:30 ± 1:13 during and 07:13 ± 1:26 outside the competitive season. No gender differences were obtained among the athletes what comes to total sleep durations. The researchers pointed out, that there were significant differences between athletes what comes to total sleep time some of the athletes getting considerably more sleep than the average value and some considerably less. (Hrozanova et al 2018.) These results indicate, that a part of the elite athletes do not get enough sleep on average, and particularly the amount of sleep during training season seem to be improper.

An interesting study of Lastella et al (2015) compared the differences in sleep between Australian elite athletes from individual and team sports. The athletes in this research were not anymore teenagers, but still quite young. A total of 124 (104 male and 20 female) elite athletes (mean ± s: age 22.2 ± 3.0 years) from five individual sports and four team sports participated in this study. Participants' sleeping behavior was assessed using self-report sleep diaries and wrist activity monitors for a minimum of seven nights during a typical training phase. The results showed, that overall the athletes obtained 6.8 ± 1.1 h of sleep per night and athletes from individual sports obtained less sleep than athletes from team sports (individual vs team; 6.5 vs 7.0 h). (Lastella et al 2015.) As teenage athletes, also majority of the young elite athletes seem to get improper amounts of sleep (under 8h). The researchers discussed the possible causes for the differences of sleep times between individual and team sport athletes and their conclusion was, that individual sport athletes such as triathlonists and swimmers tend to have excessive

training demands which often require athletes to complete multiple training sessions per day. Therefore, the athletes have to wake up early to go to their morning session and they also might have problems in falling asleep immediately after their evening session. The researchers pointed out the importance and advantage of napping if the training times require the athletes to wake up early and go to bed late. (Lastella et al 2015.)

In summary, the sleeping behavior and total sleep duration of young athletes seem to be quite often insufficient even if individual differences seem to exist some of the athletes getting enough sleep and some not. Since sleep is extremely important both for development and sport performance, the importance of promoting sufficient sleep among youth athletes is of great importance since the lack of sleep seem also to be continued after the adolescent age. Promoting napping and resting during the daytime could also be one way to promote athletes' recovery if the early school mornings or morning training sessions force the athletes to wake up early and thus shorten the total sleep duration.

In this chapter, the importance of physical activity and active lifestyle, nutrition and sleep in adolescence and among young athletes was investigated. Also, the current health behavior of youth and young athletes in the areas of physical activity, nutrition and sleep was reviewed. Based on this review it can be argued, that all these topics are highly related to both health and sport performance of adolescent athletes, and thus the promotion of these topics are of great importance for those working with young athletes. In the next chapter, the sports club as a health promoting setting and the coaches' role as health promoters will be investigated and reviewed.

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2 HEALTH PROMOTION IN A SPORTS CLUB SETTING

Health promotion directed to kids and adolescents is something that should be emphasized worldwide, since the health behavior of the future is established in childhood and adolescence and tracked into adulthood. Similarly, also risk behaviors might be shaped already before the adulthood. (Inchley et al 2016.) Physical activity, nutrition and obesity are among the major health promotion areas of adolescents. Other major health promoting areas include for example health risk behaviors (smoking, alcohol use, drug misuse, sexual health and risk taking) depression & mental health and health inequalities and social exclusion. (Viner & Macfarlene 2005.) In this chapter, the concepts of health promotion and setting based health promotion will be explained and discussed. A special emphasize will be set on children and adolescents**.** Further on, the role of sports club as a health promoting setting will be reviewed as well as the role of coaches as important health promoters and educators of youth.

2.1 Health promotion: An Overview

Health promotion is defined as "the process of enabling people to increase control over, and to improve, their health". (Ottawa Charter For Health Promotion, 1986). Health promotion should focus on achieving equity, aim to reduce differences in current health status and ensure equal opportunities and resources for people to achieve their fullest health potential. This in turn is enabled in secure and safe environments, when getting access to information, by life skills and by opportunities to make healthy choices. (Ottawa Charter For Health Promotion, 1986.)

Health in turn, is defined as a complete physical, mental and social wellbeing and to reach this state, an individual or group must be able to identify goals, to satisfy needs and cope with the environment. Thus, health is seen as a resource for everyday life as something positive and emphasizes both individual, social and physical capacities. Therefore, also health promotion is something that should be seen not only as the responsibility of the health sector, but rather something that is present in everyday life and incorporated in the lifestyles. (Ottawa Charter For Health Promotion, 1986.)

To be able to promote equal and overall health, the health promotion task cannot be left only for the health sector alone. Instead, health promotion demands wider perspectives and should be driven by all concerned: by governments, by social sectors, by local authorities, by nongovernmental and voluntary organizations, by local authorities, by industry and media. For

effective health promotion, health promotion strategies and programs should be adapted to local needs and take into account differing social, cultural and economic systems. (Ottawa Charter For Health Promotion, 1986.)

For health promotion to be effective, it should be planned with an understanding of the recipients; their age, health and social characteristics should be taken into account when planning the health promotion actions. (Glanz et al 2002, 13) In other words, it plays a huge difference whether health promotion is directed for example to elderly or young athletes. One of the most used conceptual framework of health behavior, Health Belief Model (HBM) is a value-expectancy theory which explains, that persons' health behavior or willingness to change one's health behavior depends on (1) the persons' desire to avoid illness or get well (value) and (2) the belief that a specific health action available would promote health or prevent illness. (Janz et al 2002, 47). This means, when for example coaches want to promote young athletes' health behavior, they need to be able to "sell" their promotion in a way, that a young and probably healthy athlete could see it as something valuable to incorporate in his/her daily life.

2.2 Sports club as a health promoting setting

Since decades, the sports club in Finland have recognized the importance of promoting healthy living habits and life style as a part of the sports club activity. (Koski & Mäenpää 2018.) From year 2014 to 2016, both boys' and girls' participation in sports club activities has got more and more common in Finland. Therefore, the sports clubs have a central and probably even a growing role in promoting kids and adolescents' active lifestyle and physical health education. (Mononen et al 2016.) According to the Finnish kids and adolescents' physical activity behavior – survey (LIITU), 62% of the 9-15 year- old kids in Finland were involved in sports club activities during year 2016. Of the different age groups, being involved in sports club activities was most common among the 9-year olds, of whom 68% participated in sports club activities. The involvement in sports club activity significantly dropped in the older age groups and especially among the 15-year old adolescents, of whom 48% participated in sports club activities. Only 13% of all the kids and adolescents participating in the study had never been involved in sports club activities. This means, that nearly nine of ten kids are at some point of their childhood involved in sports club activities. (Mononen et al 2016.) The results were very similar in the same survey year 2018 showing, that the participation in sports club activity is still very common among Finnish children and adolescents (Blomqvist et al 2018). Since the

sports clubs can reach a large amount of the kids and adolescents, they also have a potential role in health promotion of the youth (Kokko et al 2014).

The main task for a sports club is without doubt to arrange organized physical activity for people in all ages, most often for kids and adolescents. Still, a sports club might also have some other expectations coming from outside, for example from parents' side and from society, especially regarding public health. (Kokko, 2010.) The importance of health promotion in youth sports clubs is also recognized in the international Olympic committee (IOC). In year 2015, IOC came out with a consensus statement, in which a clear goal was set for youth sport practice. It was stated, that "the main goal (of youth sport) is to develop healthy, capable and resilient young athletes, while attaining widespread, inclusive, sustainable and enjoyable participation and successfull for all levels of individual athletic achievement". In the statement, the authors further gave general principles for youth sports. In the general principles, they recommended the promotion of safety, health and respect for the rules. For coaches, the recommendation was to seek interdisciplinary support and guidance in managing a youth athlete's athletic development, fitness and health, and mental and social challenges and needs. (Begeron et al 2015.) Thus, the importance of health promotion is recognized even in the highest organs on the sport field.

In fact, the sports clubs worldwide commonly do recognize the importance of health promotion in the sports club activities and settings. But health promotion in a sports club is something that do not happen automatically. In Finland, supporting healthy living habits has among sports clubs been considered valuable 81% of all sports clubs in Finland considering it very important (Koski & Mäenpää 2018). But, to become a health-promoting setting, a youth sports club needs to take a comprehensive approach to its activities, aims, and purposes (Geidne et al 2013). Yet, the health promotion has still been seen as external to sporting activities in sports clubs both in Finland (Kokko et al 2006) and worldwide (Meganck et al 2015). Promoting healthy behavior and physical active lifestyle is important both for the athlete development, but also regarding the public health point of view (Kokko 2014). Also, the health promotion in sports clubs has been shown to be positively associated with enjoyment and perceived health as well as negatively dropout intentions among young athletes (Van Hoye et al 2016). The enjoyment and inclusion was also something that was emphasized in the commitment of IOC (Bergeron et al 2015).

The most important factors and standards for a health promoting sports club were developed by Kokko et al (2006). The standards were based on the Ottawa charter and statement of WHO

(1998) and were created with the help of a Delphi method. Both health experts and sports club experts took part in the process and as result, 15 most important characteristics of a health promoting sports club were launched. The experts ranked the health promotion as a part of coaching practice as number one characteristic of a health promoting sports club. The top five characteristics of a health promoting sports club according to Kokko et al (2006) are listed in Table 1.

TABLE 1. The five most important characteristics of a health promoting sports club (HPSC) defined by health experts (HP) and Sports club experts (SC). Table adopted from Kokko et al (2006) with modifications.

Standards for a health promoting sports club	Total	HP	SC	Feasibility ($\bar{x}$)
Health promotion is a part of coaching practice	1.	1.	2.	1.76
Coaches and other officials give a good example through their own behaviour	2.	4	1.	1.92
The sports club's regulations have a written section on well-being and/or health promotion and/or health education and/or healthy lifestyle	3.	3.	5.	2.56
The sports club promotes the 'fair play' ideology	4.	5.	3.	1.96
Health and well-being viewpoints are observed in the sports club's decision-making process	5.	2.	16.	1.88

After creating the standards for a health promoting sports club, Kokko et al (2014) created a model in which the basis of and elements for a sports club to become health promoting were gathered together in a model or framework. In the Health promoting sports club model presented by Kokko et al (2014), a sports club is seen as a system with several dimension or levels of actors with different kinds of tasks in supporting health promotion in a sports club setting. In the core of the model is individual health behavior and health status, in this case the participants in a club. Nearest the participants on the micro level are the coaches and their actions to support the participants' health behavior. (Kokko et al 2014.)

Besides of the division to different levels, Kokko et al (2014) also divided the health promoting sports club model in four different "areas" of health determinants in the line with Vancouver statement. The four most important health determinants in the Vancouver statement were the environmental, cultural, social and economic determinants. (Vancouver statement 2007). These

determinants can be fitted in all the levels of the health promoting sports club model created by Kokko et al (2014). For example, the environmental determinants on the micro level are the functional environment for coaches' health promotion activity and economic determinants the couches resources to implement health promotion. (Kokko et al 2014). The whole model with the illustrations and explanations for the different levels and health determinants is illustrated in Figure 1.

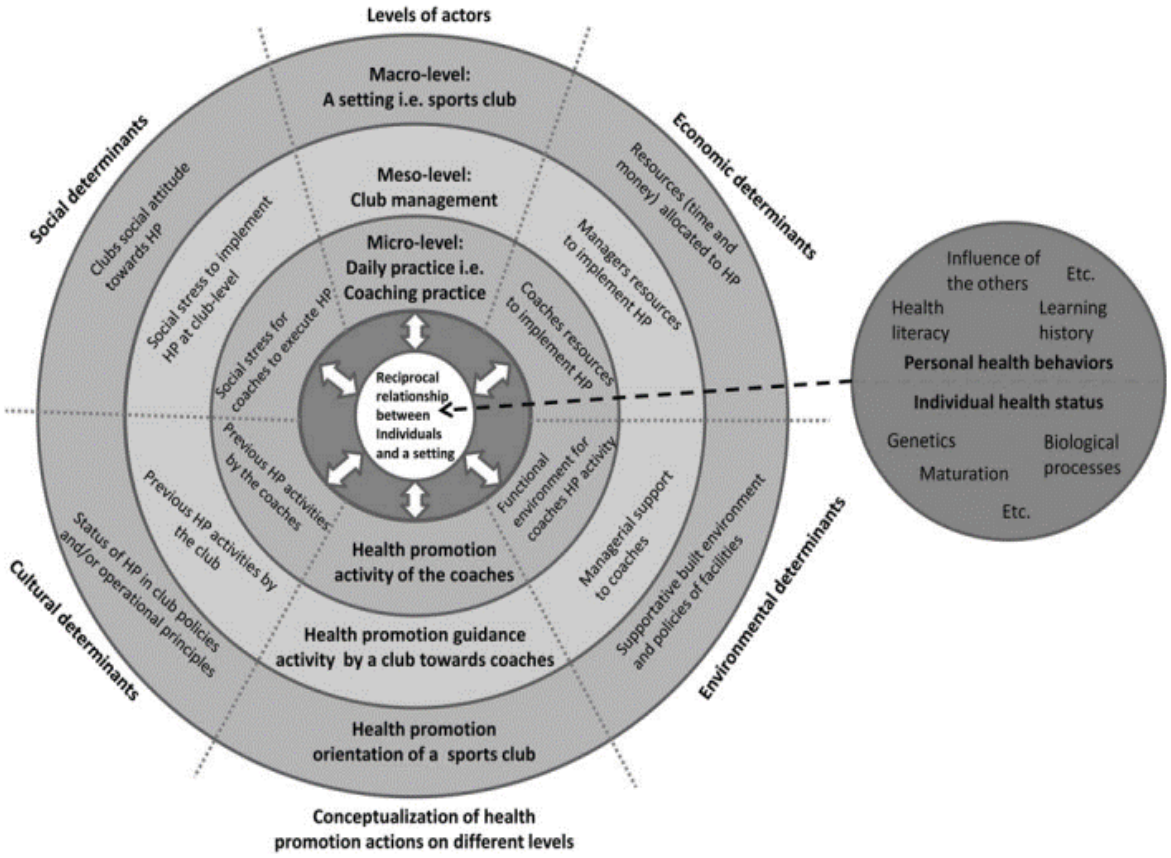

FIGURE 1. The different levels of a health promoting sports club. In the core of the model are the participants and on the micro level right next to the participants are the coaches and their health promotion actions. (Figure adopted from Kokko et al 2014).

In summary, sports clubs have a lot of potential in promoting young peoples' health behavior. The important role of the core actors of health promotion in a sports club setting, the coaches, and the previous research of athletes' perceptions of coaches' health promotion activity will be discussed in the two following chapters.

2.3 The important role of the coach in young athletes' life: Role model and a friend

It is widely recognized both in psychological research and sport field, that sport coaches, especially those working with youth, not only have the role as enablers of development and improvement of sport performance, but also the critical role as models and educators of the youth athletes. The base of healthy psychological and physiological development of youth athletes lies therefore in relationships between participants and coaches, where coaches act as supporters and promoters of healthy growth and lifestyle. (Côté et al 2010.) The athletes usually have a lot of expectations for the coach. The coach is expected to be competent in the sport he/she coaches, the coach should be able to enhance the athletic performance and create results. But there are expectations also for the characteristics and behavior of the coach: A good coach should be fair and treat the athletes equally. Often the athletes, especially young athletes, look up to the coach and want to be similar that the coach is. (Hämäläinen 2003.)

A well working and overall health supporting athlete – coach relationship is a lot more than only giving advice in a certain sport. A known framework referred to 5C's is used for conceptualizing the overall development of athletes from a coaching perspective. The "5C's" refer to competence, confidence, connection, character, and caring/compassion. These "5C's" are something that a coach should emphasize and strive to in his/her coaching to be able to develop wellbeing and healthy athletes. (Côté et al 2010.) In the line of this concept of "5C"s, the coach is often described by athletes to be more than just a coach. In the licenciate work of Hämäläinen (2003), athletes described their relationships to their coach by writing short stories. In the stories, the coaches were described to be as close as friends and family members are and characteristics of the coach which contributed to these descriptions were reliability and caring, which also is mentioned in the concept of "5C"s. (Hämäläinen 2003.)

By giving the athletes also health education, a coach shows that he/she cares of the athletes' health and wellbeing, which is an important part of sport practice, coach-athlete relationship and of course everyday life. Previous research has also shown, that coaches feelings, thoughts, and behaviors are both affected by and also affect those of the athlete and vice versa. (Rhind et al 2012.) Thus, the coach acts all the time as a role model for the athletes and therefore the educational role of a coach also in health - related topics must be highlighted.

There are some research results comparing the athlete-coach relationship between team and individual sports. In their research, Rhind et al (2012) compared the perceptions of team and individual sport athletes of their relationship to the coach. The results showed, that individual

athletes felt, that they were closer and more committed to their coach. The individual sport athletes also believed that their coach felt more trust, respect, and appreciation for them than what athletes in team sports believed of their coaches. (Rhind et al 2012.) Therefore, it is of great importance for a coach, especially in team sports, to ensure that a best possible contact and communication with all the athletes.

2.4 Coaches activity as health promoters

For effective health promotion in sports club setting, the health promotion should occur on several different levels within the setting, and all the actors on the different levels should support the idea of health promotion along with developing the athletes and athletic performance. Still, without the actions of those working on daily basis together with the athletes on the micro level, the attempt of creating a health promoting sports club will be impossible. The micro level actors are the coaches and the importance of coaches' actions in health promotion is also highlighted by the fact, that coaches are important authorities, educator and role models for children and adolescents taking part in the sports club activities as highlighted in the chapter above. Thus, they also have a great chance to influence the health behavior of their athletes if they so want (Kokko et al 2014).

There are some earlier studies which have compared the self -reported health promotion activity of club coaches and the perceptions of athletes' what comes to coaches' health promotion activity. In his doctoral dissertation, Kokko (2010) reviews the results of the Health promoting sports club (HPSC) study of coaches' (n=240) health promotion activity and young 14-16 years old male athletes' (n= 646) perceptions of their coaches' health promotion activity. The athletes represented different sports as follows: 33% participated in ice-hockey, 36% in soccer, 17% in cross-country skiing and 14% in track and field. Over two thirds competed on local or regional levels and about 25% on the national level. Less than 1% did not compete in their sport. (Kokko 2010, 75).

In the HPSC study, the coaches were asked about their health promotion activity in different health topics and the athletes their perceptions of the coaches' health promotion activity in these topics. The athletes rated their perceptions of their coaches' health promotion activity for every health topic on a 3- point Likerty scale as follows: "no, some or a lot" health promotion in this topic. For physical activity, 13% of the athletes perceived that their coach had never done health

promotion in this area, 60% answered “some” and 27% “a lot”. For nutrition, the percentages were 11 % “no”, 53% “some” and 36% “a lot”. Finally, for sleep/rest, the perceptions of the athletes were distributed in a following manner: 5% “no”, 36% “some” and 59% “a lot”. For all these health promotion topics, the coaches rated their health promotion activity significantly higher than the athletes perceived ($p < 0.001$). Overall, the coaches evaluated their health promotion implementation thirteen times more likely as being on the active/high level than the young athletes did. (Kokko 2010.)

Similar results has also been found in the survey on the Physical Activity Behaviors of Children and Adolescents in Finland (LIITU 2016). In the LIITU survey (2016) the young athletes were asked 13 questions concerning the actions of their club coach. One of the questions concerned the health promotion activity and health guidance of the coach. Of the 15- years old youth, 37% totally agreed that their coach did promote a healthy lifestyle as a part of his/her coaching practice. The perception of coaches’ health promotion activity seemed to decline with age since as many as 47% of the 11-years old youth had answered “totally agree” in the same health guidance activity- question. (Mononen et al 2016.)

Quite similar trends in athletes’ perceptions of coaches’ health promotion activity has also been reported abroad. Van Hoye et al (2016) studied young French football players aged 8-14 (n = 342, 324 males, 11 females and 5 did not reveal their gender) and their perceptions of their coaches’ health promotion activity. The players rated their coaches’ health promotion activity on a five- point scale ranging from 1 (“does not describe the coach at all”) to 5 (“describes the coach very well”). The questions were related to respect to others, health topics and substance use. The factor analysis results revealed, that in the players perceptions, the coaches promote most often the respect to oneself and others (4.00). The healthy lifestyle- part of the analysis scored 3.59. indicating, that players do think that their coaches promote healthy lifestyle to some extent, but not as high as respect to others. The substance use topic on the other hand was rated as most seldom promoted (2.49). (Van Hoye et al 2016.)

The substance use topic among athletes and their coaches’ health promotion has also been investigated in Finland. Ng et al (2017) investigated the substance use (tobacco, alcohol, snuff) in young athletes (n = 671) and their coaches health promotion activity in substance use. The results of the study revealed that guidance and health promotion of coaches in the substance use- topic was more frequent when substance use was more common. For alcohol, the usage was 1.8 (OR 1.8) times more common if the coach had done a lot of health promotion compared with no promotion at all. The same trend was also seen for smoking and snuff: The young

athletes were 1.77 times more likely to smoke or 2.59 times more likely to use snuff if their coach had been promoting these topics often compared to no promotion at all. Thus, it seems, that the coaches are more active in health promotion if there occur unhealthy (substance) behavior among the athletes. (Ng et al 2017).

The substance usage, more accurately snuff-usage, has also been recently studied in Finland in the Master's thesis of Roosa Pelto-Arvo (2017). In her thesis, she investigated the snuff-usage of young floorball players (n = 449, 302 boys and 147 girls). According to her research results, 39% of the 13-20 years old floorball players had been testing snuff at some point. The boys were more likely to have tested snuff (52%) compared with girls (21%). As many as 45% of the players told, that they had not been talking about snuff within the team and only 14% of the players told that either the coaches or the parents had told them about the negative outcomes of snuff-usage. Thus, among floorball players it seems, that at least snuff-usage promotion could definitely be more common. (Pelto-Arvo 2017).

To summarize the chapter, it seems, that there would be a lot of potential for coaches to promote young athletes' wellbeing and healthy lifestyle what comes to physical active lifestyle, nutrition and sleep/rest. Research is showing, that young athletes could improve their health behavior in all these areas and improvement in these health behaviors could also improve their sport performance. Previous research of athletes' perceptions of their coaches' health promotion is mainly done among male -athletes and it seems, that the perceptions of the health promotion activity are varying but clearly showing, that improvement could be done at least among the young male athletes' coaches' health promotion activity.

4 RESEARCH QUESTIONS

The aim of the study is to investigate the health promotion activity of club coaches in perception of young athletes what comes to active lifestyle, nutrition and sleep.

The aim is also to investigate and compare the health promotion activity of coaches in perception of young athletes in single- and team sports, different sport disciplines and athletes doing sports on different levels.

The research questions are following:

1. How actively do coaches promote health behavior in sports clubs in the perception of young athletes what comes to active lifestyle, nutrition and sleep?

    1.1 Are there differences in the perceptions between young female and male athletes what comes to coaches' health promotion activity?

    1.2 Are there differences in the perceptions between single and team sports athletes what comes to coaches' health promotion activity?

    1.3 Are there differences in the perceptions between athletes from different sports what comes to coaches' health promotion activity?

    1.4 Does the level of the athlete have an association with the perception of coaches' health promotion activity?

5 METHODS

5.1 Background and the aim of the study

This study is part of the Health Promotiing Sports Club (HPSC) study carried out in Finland by the consortium of University of Jyväskylä, UKK institute and six sports & exercise medicine centers (SMC); Clinic of Sports and Exercise Medicine (Helsinki), LIKES Foundation for Sport and Health Sciences/Mehiläinen Sports Clinic (Jyväskylä), Kuopio Research Institute of Exercise Medicine (Kuopio), Tampere Research Center of Sports Medicine (Tampere), Paavo Nurmi Centre (Turku), and Department of Sports and Exercise Medicine, Oulu Deaconess Institute (Oulu). (Kokko et al 2015). The aims of the HPSC study were to investigate the current health promotion activities of youth sports clubs and coaches, the health behaviors and health status of youth participating in sports clubs compared to non-participants and finally to find out whether there are connections between sports clubs' orientation and activity in health promotion, and health of the sports club participants. (Kokko et al 2015.)

The aim of this study. In this Masters' Thesis, the focus is set in the part of investigating the sports club participants' perceptions of their coaches' health promotion activity. More accurately, the aim of the study is to investigate the health promotion activity of club coaches in perception of young athletes what comes to active lifestyle, nutrition and sleep. The aim is also to investigate if there are differences between perceptions of athletes representing different genders (girls and boys), athletes representing single- and team sports, athletes from different sport disciplines and athletes competing on different levels.

5.2 Participants

Totally 1889 sports club participants aged 14 -16 were invited to participate in the study, but finally 670 answered. Of the participants, 382 were boys and 288 girls, aged 14 -16 years (two different age cohorts, youth born in 1997 and 1998) from 154 different sports clubs. Originally the aim was to reach five girls and five boys from each club, but this criterion was reduced to a minimum of three per gender because there were simply not enough targeted age youth in each club, especially for the individual sports. The participants were from sports clubs representing the ten most popular youth sports in Finland: Basketball, cross-country skiing, floorball, soccer, gymnastics, ice-hockey, orienteering, skating, swimming, and track and field. For summer

sports, 70 clubs and for winter sports, 84 clubs participated in the study. The sports clubs in the dataset were geographically from different regions, they were both small and large in magnitude and located in both cities and in the countryside. Thus, the sports club sample can be considered as both nationally and sport-wide representative.

5.3 Data collection

The data for the study was collected with help of online surveys. The data was collected during year 2013. For winter sport athletes, the surveys were completed between January and May and for summer sport athletes, during august to December. Additionally, complementary data was collected during spring 2014.

The HPSC study questionnaire for athletes included questions widely about the athletes' health behavior including physical activity, nutrition and sleep, their sport and training habits, coaches' health promotion actions and athletes' school performance. The estimated time to answer the survey was adviced to be about 30 – 45min and the participants were informed, that only the researchers will be able to see their answers. When answering the coaches' health promotion activity- questions, the participants were adviced to base their answers on their perceptions from the current season in their main sport.

In the questionnaire, participants were requested to identify their gender (girl or boy) and their main sport with help of an open question ("My main sport, the sport I do most often"). Thereafter the participants were asked to identify their level on which they compete on or if they don't compete at all with help of the question "At what level league or competition do you participate?". After this, the participants were asked to rate their head coaches' health promotion activity. The participants were asked the following question: "How often has your head coach during the past six months gone through at least basics of the following health topics". Totally, 13 different health topics were investigated, but the topics covered in this thesis were physically active lifestyle, nutrition and sleep/rest.

To rate their coaches' health promotion activity for all the three topics separately, the participants could choose one of four alternatives from a Likert-scale ("never, seldom, often, really often") which describes their coaches' actions in the best way in the particular health topic. As the case was for the athlete level, also the four point- Likert Scale of athletes' perceptions of their coaches' health promotion activity frequency was reduced to three

categories by combining the two highest categories (“often” and “really often”) into one category (“often”). The answers “never”, “seldom” and “often” were given scores 1-3 in the analysis

5.4 Measurements and variables

When choosing the level on which they do sports on, the participants could choose from five different levels and the alternatives were following: Finnish championship-level (FCL), First division or other national level (ONL), regional level (RL), Local level (LL) or I don’t compete in my sport (NON). Concerning the percentage distribution, the categories describing sport level were reduced from originally five categories (Finnish Championships Level, other national level (1-division eg), regional level, Local level and non-competing) to four categories due to the low percentage distribution in the two lowest categories. Local level and non-competing categories were put together in one category: Local level/Non-competing.

For the sports diciplines, two different variables were made: Single- and teamsports (2 variables) and sport groups (4 categories). In the sport group division, the sports disciplines were divided into four different groups of sports with similar elements (endurance, aesthetic, ball-games and other) in each group. This division has been developed originally by Sundgot - Borgen (1993) (Sundgot - Borgen 1993 by Kerr et al 2007, 80.). Originally Sundgot- Borgen (1993) divided the sports in six disciplines (endurance, aesthetic, ball-games, power sports, weight-dependent and tactical) in which sports with similar elements were put in the same group. (Sundgot – Borgen 1993 by Kerr et al 2007, 80.) But since the percentage distribution was low for power, weight- dependent and tactical sports in the current data, these sports were grouped as one group, “other”, in current research. The endurance sports (ES) consisted mainly of cross-country skiing, orienteering and swimming, aesthetic sports (AS) of gymnastics, figure skating and dance, ball sports (BS) of football, floorball and ice hockey and the other sports (OS) of track and field, wrestling and martial arts.

5.5 Data analysis

Descriptive statistics and percentage distribution of perceptions was performed for all the athletes together and separately for different genders, single and team sports, different sport groups and for the different levels. The correlations of the athletes’ perceptions in the different health topics (physically active lifestyle, nutrition and sleep/rest) was also investigated with

Pearson's correlation (2-tailed). Crosstabulation and Chi square test were used to compare differences between perceptions of athletes of different genders and single- and team sports athletes and Kruskall-Wallis (oneway ANOVA on ranks) -test was used to compare differences of perceptions of more than two groups (athletes of different sport groups and athletes competing on different levels). Statistical analyses were all performed using SPSS V.20.0 statistical software. The significance was set to be $p < 0.05$ in all statistical tests.

5.6 Reliability and validity

Survey items that measured coaches' health promotion activity in different themes (physically active lifestyle, nutrition and sleep/rest) has been developed and used before by Kokko in his doctoral dissertation (Kokko 2010), but the survey items have not been validitated more extensively. This is one important thing to be taken into account when interpreting the results. The validity of the study is though strengthened by the large amount of participants (n = 670) and the fact, that they were reqruited from different locations, different sports clubs and from several sports from all over Finland. Also, the distribution of participants in different genders and single and team sports was quite equal. These factors further strengthen the validity of the research.

5.7 Ethical standards

The HPSC study is carried out conforming with the declaration of Helsinki. Ethical approval was received from the Ethics Committee of Health Care District of Central Finland. The HPSC study is close-to-practice, which generates foundations for development work within youth sports clubs. Finally, all the data and information of the participants was handled with care and only by the researchers. The participants were also notified that they had the option to refuse to participate and withdraw from the study at any time (Kokko et al 2015). A written agreement of careful usage of the HPSC- data was signed between the leading researchers and the writer of this thesis when the original data was handed over to be used in the current study.

6 RESULTS

Overall perceptions of coaches' health promotion activity. For physically active lifestyle, 45.5% of the athletes perceived their coach to promote often this topic, 34.8% perceived their coach promoted seldom and 19.7% of all the athletes perceived, that their coach never promoted this topic. For nutrition, the percentages were 47.6%, 34.9% and 17.5% and for sleep and rest 68.2%, 22.2% and 9.6% respectively. Thus, the athletes perceived that their coaches priorizied the promotion of sleep and rest, while nutrition and physically active lifestyle was promoted more seldom. The percentage distributions of all the topics are illustrated in figure 2.

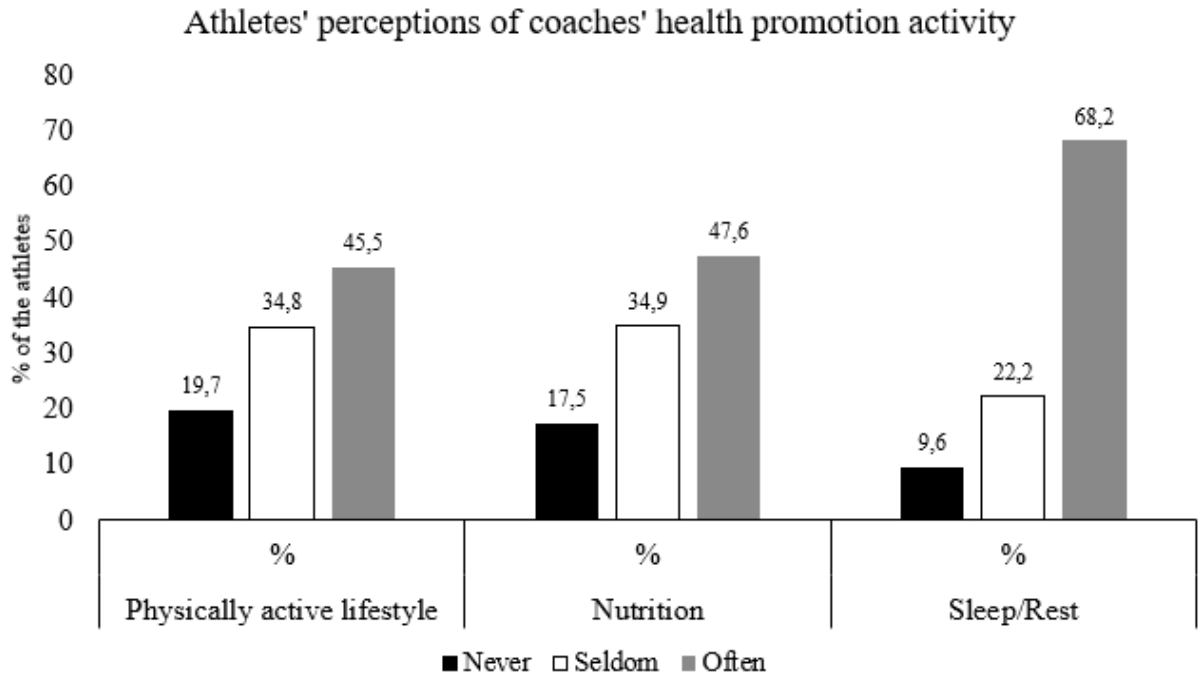

FIGURE 2**.** The percentage distribution of athletes' perception of how actively their coaches promote the following health topics in their coaching practice: Active lifestyle, nutrition and sleep/rest.

Correlations between perceptions of the different health topics. For the different health topics, quite strong and significant correlations were found between the athletes' perceptions. The correlation was strongest between the athletes' perceptions of coaches' physical activity promotion and nutrition promotion ($r = 0{,}70$, $n = 670$, 2-tailed $p < 0.001$), second strongest between nutrition and sleep/rest promotion ($r = 0, 65$, $n = 670$, 2 - tailed $p < 0.001$) and third

strongest between physically active lifestyle and sleep/rest promotion (r = 0,59, n = 670, 2-tailed p < 0.001).

Comparison between genders. The chi square tests revealed that there were no differences between girls' and boys' perceptions of their coaches' health promotion activity for physical active lifestyle (χ^2 (2) =0.003; p = 0.999*)*, nutrition χ^2 (2) =0.313; p = 0.191) or sleep/rest (χ^2 (2) =4.596; p = 0.100) promotion.

Comparison between single- and team sport athletes. As the case was for the gender, no differences were found between single (n = 226) and team sport (n= 444) athletes' perceptions of physical active lifestyle (χ^2 (2) = 3.978, p = 0.137), nutrition (χ^2 (2) = 0.589, p = 0.745) or sleep/rest (χ^2 (2) = 2.605, p = 0.272). However, the percentage distribution revealed, that girls perceived more often, that their coaches never promoted nutrition (20.5%) and sleep/rest (15.2%) issues than boys did (12.2% for nutrition and 7.6% for sleep and rest respectively). The percentage distribution of the perceptions of coaches' health promotion activity of girls and boys & individual and team sport athletes are shown in table 2.

TABLE 2**.** The frequencies and percentage distribution of different gender and single- and team sport athletes' perceptions of their coaches' health promotion activity. No significant differences were found neither between genders nor between single- and team sport athletes.

	Girl		**Boy**		**Single sport**		**Teamsport**	
	N	%	N	%	N	%	N	%
Total	288	43	382	57	226	33.7	444	66.3
Physical active lifestyle								
Never	57	19.8	75	19.6	44	19.5	88	19.8
Seldom	100	34.7	133	34.8	68	30.1	165	37.2
Often	131	45.5	174	45.5	114	50.4	191	43
Nutrition								
Never	59	20.5	58	15.2	43	19	74	16.7
Seldom	95	33	139	36.4	78	34.5	156	35.1
Often	134	46.5	185	48.4	105	46.5	214	48.2
Sleep/rest								
Never	35	12.2	29	7.6	27	11.9	37	8.3
Seldom	58	20.1	91	23.8	46	20.4	103	23.2
Often	195	67.7	262	68.6	153	67.7	304	68.5

Comparison of athletes of different sport disciplines. To compare the perceptions of athletes of different sport discipline groups (n = 4), Kruskall-Wallis test was used (one - way ANOVA). The different disciplines were endurance sports (ES, n = 124), aesthetic sports (AS, n = 93), Ball-sports (BS, n =384) and other sports (OS, n = 69). The test revealed no differences between the athletes' perceptions of their coaches' health promotion activity for physical active lifestyle (X^2 (3, 670) = 4.302, p = 0.231, mean rank for ES 363.44, AS 340.02, BS 325.39 and for OS 335.47), nutrition X^2 (3, 670) = 2.327, p = 0.507, mean rank for ES 351.13, AS 332.44, BS 335.65 and for OS 310.71) and sleep/rest (X^2 (3, 670) =0.236, p = 0.972, mean rank for ES 338.84, AS 333.60, BS 333.70 and for OS 342.07). The percentage and absolute distribution of different disciplines' athletes' perceptions of coaches' health promotion activity are shown in table 3.

TABLE 3**.** The absolute and percentage distribution of different sport disciplines' athletes' perceptions of their coaches' health promotion activity. No significant differences were found between different sport disciplines' athletes' perceptions.

	Endurance		**Aesthetic**		**Ball-sports**		**Other**	
	N	%	N	%	N	%	N	%
Active lifestyle								
Never	21	16.9	17	18.3	81	21.1	13	18.8
Seldom	36	29	33	35.5	139	36.2	25	36.2
Often	67	54	43	46.2	164	42.7	31	44.9
Nutrition								
Never	20	16.1	19	20.4	67	17.4	11	15.9
Seldom	39	31.5	29	31.2	134	34.9	32	46.4
Often	65	52.4	45	48.4	183	47.7	26	37.7
Sleep/rest								
Never	12	9.7	15	16.1	32	8.3	5	7.2
Seldom	26	21	13	14	94	24.5	16	23.2
Often	86	69.4	65	69.9	258	67.2	48	69.6

Comparison of athletes doing sports on different levels. The Kruskall -*W*allis test was also used to compare differences between perceptions of athletes doing sports on different levels. For athletes' perceptions of physically active lifestyle promotion, a significant difference was found between the perceptions of Finnish championships level and regional level athletes (X^2

(3, 670) =28.360, p = 0.000) and Finnish championships level and Local/non-competing athletes (X^2 (3, 670) =28.360, p < 0.05). The mean rank for Finnish championships level athletes was 368.64, for regional level 298.67 and Local level/non-competing 247.88 revealing, that Finnish championships level athletes perceived their coach to promote significantly more often of the importance of physical active lifestyle than the Regional level or Local level/Non-competing athletes perceived. No other differences between groups was found in athletes' perceptions of coaches' health promotion activity in the topic of physically active lifestyle. The mean rank for other national level athletes was 328.10 these athletes scoring second highest after national level. The percentage distribution of different levels' athletes' perceptions in the topic of physically active lifestyle is illustrated in figure 3.

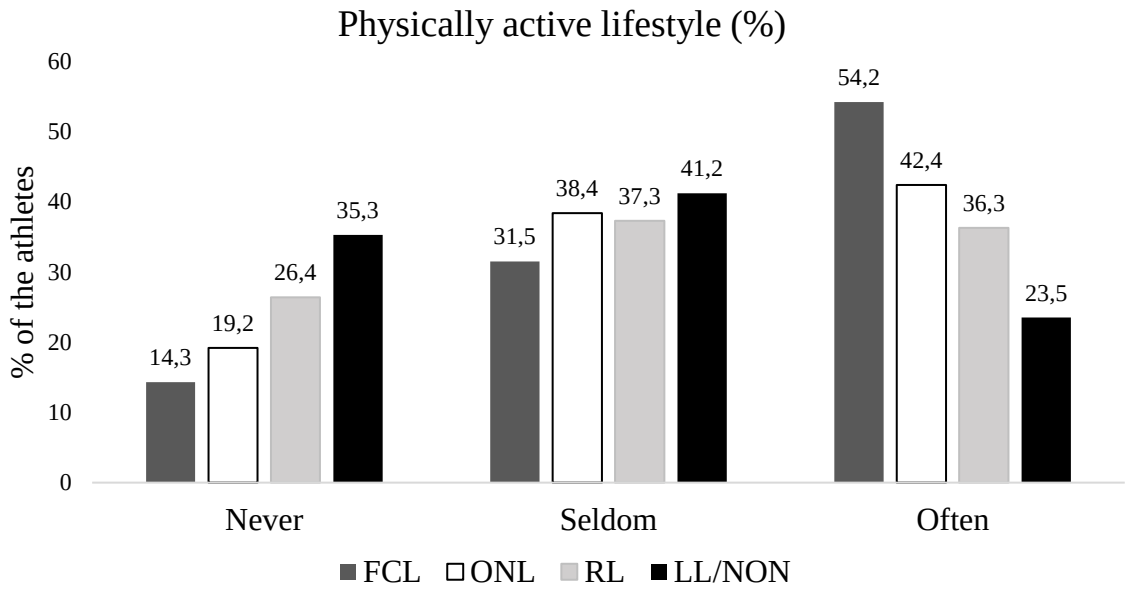

FIGURE 3. The percentage distribution of different levels' athletes' perceptions of their coaches' health promotion activity in the topic of physically active lifestyle. A significant difference was found between Finnish championships level and Regional level, as well as between Finnish championships level and Local level/non-competing level athletes' perceptions. The Finnish championships level athletes perceive their coach promotes significantly more often the importance of physically active lifestyle than the regional level or Local level/non-competing athletes do.

For perceptions of nutrition promotion, significant differences between several groups was found. There was found a significant difference between Finnish Championship Level and

Regional Level (X^2 (3, 670) =51.528, p = 0.000, Finnish Championship Level and Local level/non-competing (p = 0.000), Other national level – Local Level/Non - competing (p < 0.001) and between Regional level and Local level/non-competing (p < 0.012) athletes. The mean rank for Finnish championships level athletes was 377.29, for Other national level 326.23, for regional level 294.39 and for Local level/non-competing 192.57 showing, that Finnish championships level athletes perceived their coach to promote significantly more often nutritional issues than the regional level and local level/non-competing athletes perceived. Similarly, the other national level athletes perceived their coach to promote significantly more often nutrition than did the local level/non-competing athletes. Finally, the regional level athletes also perceived that their coach promoted significantly more nutrition than the local level/non-competing athletes perceived. The percentage distribution of different levels' athletes' perceptions in the topic of nutrition is illustrated in figure 4.

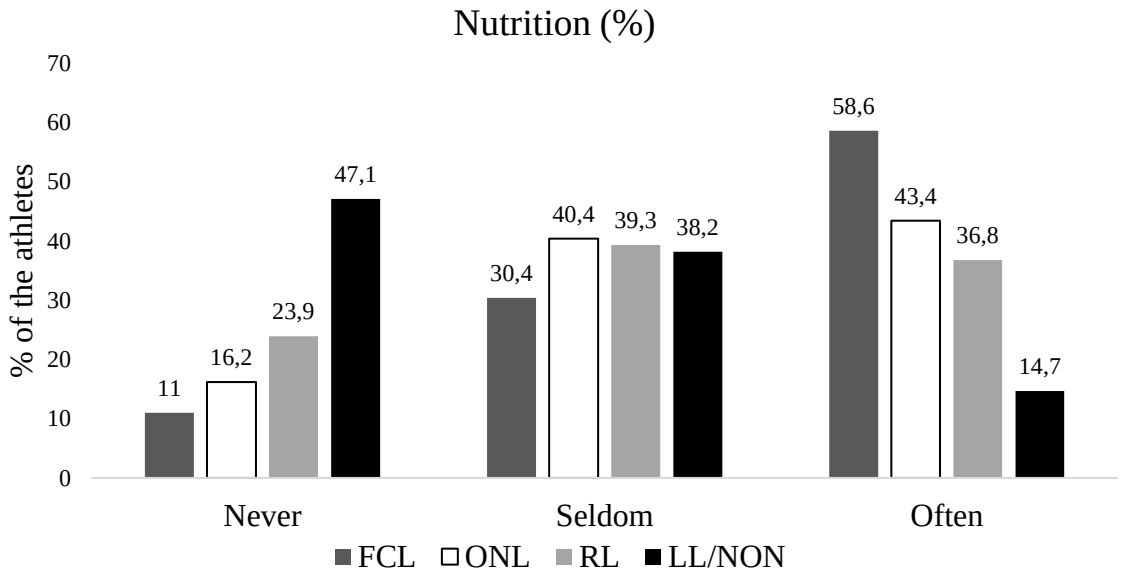

FIGURE 4. The percentage distribution of different levels' athletes' perceptions of their coaches' health promotion activity in the topic of nutrition. A significant difference was found between Finnish -championships level and Regional level, Finnish championships level and Local level/non-competing, Other national level and Local level/non-competing and regional and Local level/non- competing level athletes' perceptions. The higher -level athletes perceive their coach talks significantly more often about nutrition than the lower level athletes do. *** = p =0.000, *= p < 0.05.

For perceptions of sleep/rest promotion, the results were similar than the results for active lifestyle and nutrition promotion. There was found a significant difference between Finnish

championships level and regional level (X^2 (3, 670) =59.451, p = 0.000, Finnish championships level and local level/non-competing (p = 0.000), Other national level – local level/non-competing (p = 0.000) and between regional level and local level/non-competing (p < 0.05) athletes. The mean rank for Finnish championships level was 369.56, for other national level 343.56, for regional level 301.60 and for local level/non-competing 175.84 showing, that Finnish championships level athletes perceived their coach to promote significantly more often nutrition than the regional level and local level/non-competing athletes perceived. Similarly, the other national level athletes perceived their coach to promote significantly more often nutrition than did the local level/non-competing athletes. The percentage distribution of different levels' athletes' perceptions in the topic of sleep/rest is illustrated in figure 5. The overall percentage distribution of different levels' athletes' perceptions of their coaches' health promotion in all the three topics in turn is shown in table 4.

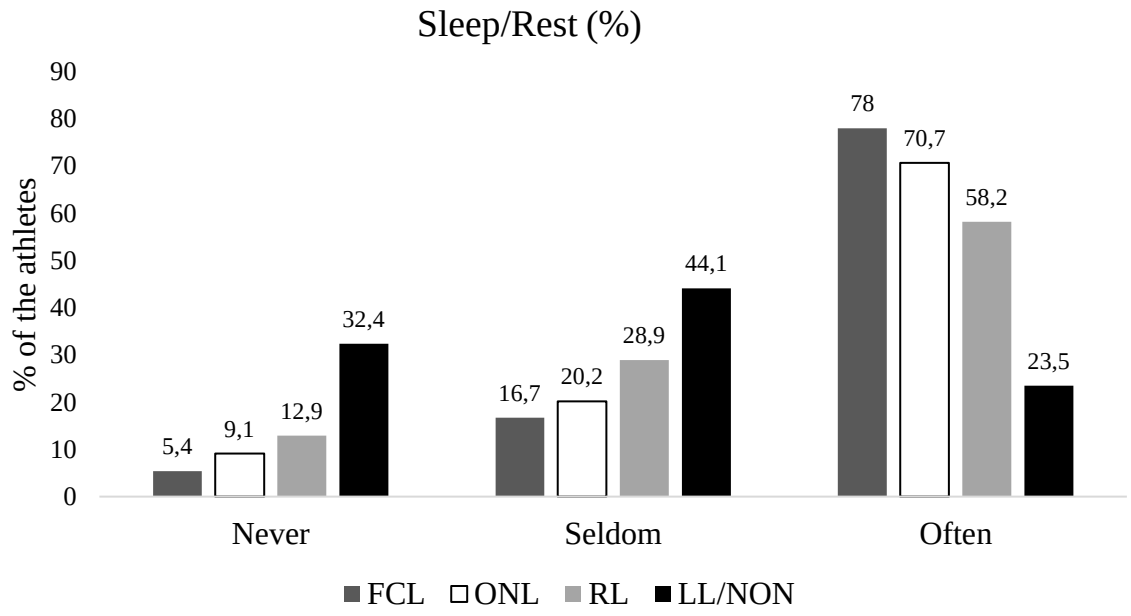

FIGURE 5. The percentage distribution of different levels' athletes' perceptions of their coaches' health promotion activity in the topic of sleep/rest. A significant difference was found between Finnish championships level (FCL) and Regional level (RL), Finnish championships level and Local level/non-competing (LL/NON), Other national level (ONL) and Local level/non-competing and regional and Local level/non- competing level athletes' perceptions.

TABLE 4. The overall percentage distribution of different levels' athletes' perceptions of their coaches' health promotion activity in all the different health topics. Overall, the Finnish Championships Level athletes perceived, that their coaches are the most active in health promotion. Significant differences between groups are in the table marked with stars. *** = *p =0.000*, * = *p < 0.05*.

	FCL (1) %	**ONL (2)** %	**RL (3)** %	**LL/NON (4)** %	Bonferroni adjusted significance
Physical activity					1> 3***, 1 > 4*
Never	14.3	19.2	26.4	35.3	
Seldom	31.5	38.4	37.3	41.2	
Often	54.2	42.4	36.3	23.5	
Nutrition					1 > 3***, 1> 4***, 2 > 4 *, 3 > 4*
Never	11	16.2	23.9	47.1	
Seldom	30.4	40.4	39.3	38.2	
Often	58.6	43.4	36.8	14.7	
Sleep/Rest					1 > 3 ***, 1 > 4 ***, 2 > 4 ***, 3 > 4*
Never	5.4	9.1	12.9	32.4	
Seldom	16.7	20.2	28.9	44.1	
Often	78	70.7	58.2	23.5	

7 DISCUSSION AND CONCLUSIONS

Overall perceived health promotion activity. The aim of this study was to investigate the athletes' perceptions of their coaches' health promotion activity in the topics of active lifestyle, nutrition and sleep/rest. The findings regarding athletes' overall perceptions of their coaches' health promotion activity are quite well in line with previous research, but the athletes in this study seemed to have a more positive view on their coaches' health promotion activity compared with earlier studies. In the current research, 68% of the athletes perceived their coach to promote often sleep and rest, 46% perceived the coach promote often physical activity and 47% perceived their coach to promote nutritional issues often. In comparison with Kokko's (2010) research, 59% of young athletes perceived, that their coach talked often about sleep/rest when only 27% perceived the same being true for physical activity and 36% thought that their coach talked often about nutrition. (Kokko 2010). Thus, it seems, that the health promotion distribution among the topics seems to be very similar compared with Kokko's research with the exception, that in the current research the athletes perceived their coach to talk notably more about every topic compared with Kokko's research.

There are some possible explanations to this more positive trend in perceptions of coaches' health promotion discovered in this study. This more positive view can depend on the fact, that coaches have simply started to incorporate health promotion more actively in their coaching practice compared with earlier research. Especially during the recent years, issues like physical activity (and inactivity like sitting) has gained more and more attention worldwide. Similarly, nutritional issues have been popular and for example the publication of the new national nutritional recommendations in 2012 and the blogging/vlogging culture has even heated up the discussion around nutrition. These issues might have led to a higher promotion level of physical activity and especially nutritional issues even among sport coaches.

Another possibility though is, that the differences between Kokko's (2010) results and the results of the current study simply depend on the difference on the answer scale. In Kokko's research, the alternatives to describe coaches' health promotion activity were "no, some, a lot" while in the current research, they were "never, seldom, often". Since there is a slight difference between "some" and "seldom", "some" sounding more positive and seldom more negative it might be, that athletes who actually perceived their coaches to talk sometimes about the health topics still didn't want to choose "seldom" in this research, but instead chose the alternative

"often". If there would have been an alternative "some" also in the current research, the percentages of athletes choosing "often" might have been lower, and thus the results of this research could have been more similar to Kokko's results.

The fact that coaches seem, according to athletes, priorisize sleep and rest- issues in their health promotion might depend on the competition and performance orientation in the coaches' thinking. Kokko (2010) argued, that sleep and especially rest is something, that is felt like directly be linked to the sport performance and thus also emphasized in the coaches' health promotion. Still, nutritional issues and physical activity are very closely linked to overall wellbeing and athletic performance as well. Thus, coaches could still pay more attention also on these issues in their health promotion activities. Research is showing, that a large part of young athletes both in Finland (Porttikivi & Suoraniemi 2018) and abroad (Exel et al 2018) fail to meet the daily recommendations of physical activity. When talking about nutrition in turn it has been shown, that athletes follow the on-going dietary trends rather than the national nutritional recommendations set by nutrition experts (Meyer et al 2007) and many athletes also fail to reach an adequate daily energy intake (Bratland-Sanda & Sundgot-Borgen 2013). Therefore, it would be of great importance to promote both a physical active lifestyle and a suitable nutrition to young athletes as much as the importance of sleep and rest.

There was also found to be significant correlations between the athletes' perceptions of their coaches' health promotion activity. The correlation was highest between physical activity and nutrition promotion ($r = 0.70$) followed by nutrition and sleep/rest ($r = 0.65$) and active lifestyle and sleep/rest ($r = 0.59$). The correlations between the perceptions reveal, that the different health promotion topics and thus coaches' health promotion activity seem to be associated whit each other. This means, that if an athlete perceives his/her coach to promote eg. active lifestyle it is likely, that the coach also promotes nutrition issues. The same is true also from the negative viewpoint: If an athlete perceive her/his coach only seldom or never promotes health issues, this is true for every health topic.

Since sleep/rest promotion was not correlated as strongly to physically active lifestyle and nutrition promotion compared with the correlation between active lifestyle and nutrition, it can though be, that sleep/rest promotion might happen solely without promotion of nutrition or physical active lifestyle. This would support the previous discussion of coaches tendence to emphasize sleep/rest promotion in their health promotion activity.

Differences between genders, single- and team sports and different sports groups. According to the current research, there seemed not to be any statistically significant differences between the perceptions of athletes representing different genders, single- and team sports or athletes of different sports. Earlier research has mainly investigated the perceptions of young male athletes and therefore it is hard to make comparisons to earlier research what comes to perceptions of athletes of different genders. Earlier research has though compared the relationship of substance use of different gender athletes and substance use health promotion activity of coaches. Ng et al (2017) showed, that boys perceived their coach to promote health issues concerning substance use (alcohol, snuff and tobacco) more often than girls did. The results of the study further showed, that substance use was regardless of the more active promotion more prevalent among boys than girls. The researchers concluded, that the health promotion was therefore not preventative but rather reactive to the unhealthy (substance use) behavior that already had occurred. (Ng et al 2017).

Earlier research has shown, that especially girls in endurance and aesthetic sports are extra vulnerable to nutrition-linked health hazards like eating disorders and low energy intake (Bratland-Sanda & Sundgot-Borgen 2013). Thus, if the promotion trend would be similar that was observed in substance use by Ng et al (2017) it could have been, that these topics might have been perceived to be promoted more frequently among the female endurance and aesthetic athletes. This trend was though not seen and no differences between groups (gender or sport) was found 53.3% of the female endurance athletes perceiving their coach to promote often nutritional issues the same being true for 50.9% of the endurance athlete males. For aesthetic sports, 49.9% of the females and 33.3% of the males perceived, that their coach talks often about nutritional issues. The aesthetic sport only had 6 male-participants though and thus the comparison is not fully valid between these groups. Of course, also the boys can have problems with nutrition even if it is not as common as among girls (Bratland-Sanda & Sundgot – Borgen 2013) and this might lead to that coaches promote nutritional issues (preventatively or reactively) equally much among these groups. There is also the possibility, that athletes of different genders and different sports in the current research simply did not have problems with health issues (nutrition) and therefore differences or similar trends in reactive health promotion as seen with the substance use- studies was not found.

Even if around 50% of the female athletes in endurance and aesthetic sports perceived their coach to talk often about nutritional issues at the same time about 50% perceived, that their coach never took up or talked seldom of nutrition issues. Bratland-Sanda and Sundgot-Borgen

(2013) highlight in their review, that coaches in general have poor awareness and knowledge regarding eating disorders and to prevent eating disorders it is of great importance to increase coaches' knowledge about risk and trigger factors, how to identify signs and symptoms, and how to manage concerns about eating disorders (Bratland-Sanda & Sundgot-Borgen (2013). Even if the coaches might identify the risks concerning nutrition among the athletes in the specific sports, it is hard for the coaches to implement promotional actions if they perceive not to have enough knowledge of the nutritional issues. This might be one additional reason why no differences were identified in the current dataset among perceptions of athletes of different genders and sports even if differences might have been expected to be found.

Differences between athletes doing sport on different levels. The only significant differences in athletes' perceptions of coaches' health promotion activity were found among athletes doing sports on different levels. Here, the athletes who were competing on the highest, Finnish championships level, generally perceived their coach to talk significantly more often about importance of physical active lifestyle, nutrition and sleep/rest compared with those competing on lower level or not competing at all. Significant differences were also found when comparing those competing on semi-high level to those, who competed on the low level or did not compete at all in their sport.

The fact that the high level- athletes perceived their coach to promote health topics more frequently might depend on several issues. First, it has been investigated, that clubs generally are more active in health guidance related to sport performance but less active concerning non-performance (Kokko 2010). Especially the top sports clubs with paid workers and coaches might emphasize the discipline, accurate preparation and competitive goals more than more recreational oriented clubs (Kokko 2010). In Finland, the sports club culture has during the past 20-30 years got more and more professional. In year 2002, there was 441 professional coaches in Finland. Year 2016, the number was 1682 and 70% of all the professional coaches worked in a sports club. (Koski & Mäenpää 2018, 24.)

The coaches who coach higher level athletes (in performance- oriented clubs) might also pay more attention to health guidance since they are concerned about the athletes' performance and how the performance is affected of the athletes' health behavior. The coaches who coach athletes on recreational level might in contrary not be as concerned about health issues and how they affect the athletes' performance since the performance might not be as important for these coaches and athletes. Since the clubs of the athletes in this dataset are not known this argument

remains only on a speculational level but can though be one possible explanation to the significant differences found among athletes' perceptions.

Second, the education of coaches might also play role in the perceived amount of health education they offer their athletes. Those coaches coaching on high level can be expected to have higher education than those coaching on recreational level. As it was argued in nutritional promotion – topic by Bratland-Sanda & Sundgot-Borgen (2013), knowledge and education are important factors when talking about the health promotion activity of coaches. Therefore, it might happen, that high-level coaches also have higher knowledge of health- related issues, and therefore are more willing and capable of promoting athletes' health behavior.

A third reason for the observed difference between different level athletes' perceptions might depend on the amount of time they spend with their coach weekly. It is likely, that for the lower level competing athletes or athletes who do not compete in their sport the weekly amount of training sessions with the coach is lower compared with the athletes who compete on high level. A coach who sees the athletes 4-5 times during a week has the opportunity to spend more time on health promotion compared with a coach who sees the athletes 1-2 times per week. A lower level coach might easily think, that if the amount of time to spend on training with the athletes is scarce, there is no extra time to spend on issues like health promotion.

The difference between high-level and recreational level athletes' perceptions of their coaches' health promotion activity is somewhat alarming. According to the newest survey on the Physical Activity Behaviors of Children and Adolescents in Finland (LIITU 2018), as many as 24% of all the 11-15 years old sports club participants in Finland do not participate in competitions in their sport and 20% of the same age group are on a recreational level. This means, that 44% of the Finnish 11 - 15 years old sports club participants could be classified as low level competing or non-competing athletes. (Blomqvist et al 2018.) If the results of the current research would be generalized it would mean, that a big part of all the sports club participants in Finland would receive significantly less health guidance than the high-level sports club participants do**.** Since it is known, that the health behavior of children and adolescents could be improved on many health - related areas including overall physical activity, nutrition and sleep/rest, it is really worrying that young sports club participants seem not, according to their own perceptions, receive equally much health guidance on all competition levels. The equality in health guidance is something that should be emphasized since polarization of health habits is something, that is mirroring the health behavior of today's adolescents (Marttunen 2015).

Finally, it is also tempting to speculate, can the results concerning the differences of the perceptions of the athletes on different levels of the current research be interpreted from a different point of view: That is, which came first: The high- level sport performance or the health promotion? Because the sport performance is, in addition to proper training, highly dependent also of the overall health and particularly of proper nutrition and sleep/rest it is interesting to speculate, whether those high level athletes who perceived their coaches to talk often about health issues also are in a head start regarding sport performance comparing to the lower level athletes, who did not perceive their coaches to talk that much about health related issues. As also Mäkelä et al (2016) argued, healthy living habits are essential for a young athlete to reach the top tactical, technical and physiological performance and if proper guidance is not offered, those competing on lower levels might not even have the chance to reach the higher levels.

Conclusions and practical applications. In conclusion, about half of all the young athletes seem to perceive, that their coaches do talk often about health issues related to physical activity, nutrition and sleep/rest. These results indicate, that coaches do to use their fruitful position as important adults in adolescent athletes' life to some extent and promote in their coaching behavior also health related topics like physical activity, nutrition and, most often of all, sleep and rest. At the same time though, the other half of the athletes perceive, that their coach only seldom or never talks about these issues. There was also found statistically significant differences between the athletes' perceptions on different levels. Therefore, all coaches, but especially those working with recreational or non-competing athletes, should still pay more attention on their health promotion activity. Further on, also the risk groups like girls in endurance and aesthetic sports should be recognized better and coaches should be even more careful with their preventive actions in which health promotion is included in. Since the health promotion is of great importance for both sport performance and public health (Kokko 2014), health promotion actions should further be emphasized also in all levels of sports club activities and education for coaches should also be provided. In the future research, coaches' actual actions and athletes' perceptions concerning coaches' health promotion activity should be investigated. The research should also be done with even bigger and more equal sized groups of athletes from different sport disciplines and levels. Also, the association with coaches' education and health promotion activity is something that could be further investigated.

Limitations of the research. Finally, some words should be said about the limitations of the current research. Even if the participant number of current study (n=670) was quite high and

the clubs were selected around the whole country, there still was some obvious limitations in the dataset which might have affected the results. The distribution of athletes in different sports and different levels was not equal in all the groups. The ball-sports dominated in the sports genre with totally 57.3% athletes following endurance athletes (18.5%), aesthetic athletes (13.9%) and athletes in other sports (10.3%). Therefore, the perceptions of athletes in the smaller groups might not have been as representative for the sport genre as the ball-sport athletes' perceptions were.

In the same manner, also the distribution of athletes from different levels was not equal in all groups 50% of all the athletes in the dataset competing on Finnish championships level compared with only 30% and 5.1% competing on the two lowest levels or not competing at all. Therefore, it can be discussed, that did the level of the athletes possibly affect some of the comparisons more than did for example the sport or gender? Since the high -level athletes also perceived their coach to talk significantly more often about health issues it might be, that also the overall results regarding perceptions of coaches' health promotion therefore are more positive than they would have been with a more equal distribution of athletes on different levels.

The lack of information of the coaches' background (ie. gender, age, education) and their own estimation of their health promotion activity is also one limitation of the current research. Since only the athletes' perceptions of coaches' health promotion activity was investigated, the perspective is quite subjective and the health promotion reality can be something else from the coaches' perspective. Thus, future research should further investigate the coaches' point of view of their health promotion activity. Also, the relationship of coaches' education and health promotion activity and the sport, level and gender they coach should be investigated in the future research. This would help the guidance, education and specific support for the coaches' health promotion actions. The aim of health promotion in a sports club setting should be, that regardless competition level, all the young athletes would receive health promotion and get the opportunity to both adopt a healthy lifestyle to promote their health and optimal sport performance.

Finally, also the reliability and validity of the survey items that measured coaches' health promotion activity in different themes (physically active lifestyle, nutrition and sleep/rest) needs to be mentioned. This survey has been developed and used before by Kokko in his doctoral dissertation (Kokko 2010) but this questionnaire is not validitated more widely. Therefore, it cannot be stated for sure, that the survey measured exactly the items that were aimed be measured.

8 REFERENCES

Bergeron, M. F., Mountjoy, M., Armstrong, N., Chia, M., Côté, J., Emery, C. A., Faigenbaum, A., Hall, G. Jr., Kriemler, S., Léglise, M., Malina, R. M., Pensgaard, A. M., Sanchez, A., Soligard, T., Sundgot-Borgen, J., van Mechelen, W., Weissensteiner, J. R., Engebretsen, L. 2015. International Olympic Committee consensus statement on youth athletic development, Br J Sports Med, 49, 843–851.

Blomqvist, M., Mononen, K., Koski, P., Kokko, S. 2018. Urheilu ja seuraharrastaminen in the work Kokko, S. & Martin, L. 2018. ”Lasten ja nuorten liikuntakäyttäytyminen suomessa LIITU-tutkimuksen tuloksia 2018”, Valtion liikuntaneuvoston julkaisuja 2019:1.

Bratland-Sanda, S. & Sundgot-Borgen, J. 2013. Eating disorders in athletes: Overview of prevalence, risk factors and recommendations for prevention and treatment, European Journal of Sport Science, 13:5, 499-508

Côté, J., Bruner, M.W., Erickson, K., Strachan, L., & Fraser-Thomas, J. 2010. Athlete development and coaching. In J. Lyle & C. Cushion (Eds.), Sport coaching: Professionalization and practice (pp. 63-83). Oxford, UK: Elsevier.

Exel, J., Mateus, N., Travassos, B., Gonçalves, B., Gomes, I., Leite, N., Sampaio, J. 2018. Off-Training Levels of Physical Activity and Sedentary Behavior in Young Athletes: Preliminary Results during a Typical Week, Sports, 6, 141,

Galanti,, G., Stefani, L., Scacciati, I., Mascherini, G., Buti, G., Maffulli, N. 2015. Eating and nutrition habits in young competitive athletes: a comparison between soccer players and cyclists. Translational Medicine, 11,8, 44-47.

Geidne, S., Quennerstedt, M. & Eriksson, C. 2013. The youth sports club as a health-promoting setting: An integrative review of research. Scandinavian Journal of Public Health, 2013; 41: 269–283

Glanz, K., Rimer, B. K., Lewis, F. M. 2002. The scope of Health Behavior and Health Education in Glanz, K., Rimer, B. K., Lewis, F. M. “Heath Behavior and Health Education Theory, Research and Practice 3rd edition”, Jossey Bass A Wiley Imprint, United States of America.

Graham, M. 2000. Sleep needs, patterns and difficulties of adolescents, Summary of a Workshop, National Academy of Sciences, http://www.nap.edu/catalog/9941.html

Halson, S. L. 2016. Sleep and athletes, Sports Science Exchange, 28, 167, 1-4.

Heikkilä, M., Valve, R., Lehtovirta, M., Fogelholm, M. 2018. Nutrition Knowledge Among Young Finnish Endurance Athletes and Their Coaches, International Journal of Sport Nutrition and Exercise Metabolism, 28, 522-527.

Holly, B. & Engel, S. 2016. How Important is Sleep for My Young Athlete? National Youth sports and safety institut, American college of sports medicine.

Hrozanova, M., Moen, F., Myhre , K., Klöckner, C., Pallesen, S. 2018. Habitual sleep patterns of junior elite athletes in cross-country skiing and biathlon: A descriptive study. Cogent medicine, 5, 1.

Husu, P. Jussila, A -M., Tokola, K., Vähä-Ypyä, H., Vasankari, T. 2018. Objektiivisesti mitatun liikkumisen, paikallaanolon ja unen määrä teoksessa Kokko, S. & Martin, L. 2018. ”Lasten ja nuorten liikuntakäyttäytyminen suomessa LIITU-tutkimuksen tuloksia 2018” VALTION LIIKUNTANEUVOSTON JULKAISUJA 2019:1

Hämäläinen, Kirsi. 2003. ”ENEMMÄN KUIN VALMENTAJA? VALMENTAJA URHEILIJOIDEN KIRJOITUKSISSA”, licenciate work, University of Jyväskylä.

International Union for Health Promotion and Education (IHUPE) 2007. STATEMENT. Shaping the future of health promotion: priorities for action, Health Promotion International, 23, 1, 98 - 102.

Illander, O. 2014. Liikuntaravitsemus – tehoa, tuloksia ja terveyttä ruuasta, VK-kustannus, Saarijärvi.

Inchley, J., Currie, D., Young, T., Samdal, O., Torsheim, T., Augustson, L., Mathison, F., Aleman-Diaz, A., Molcho, M., Weber, M., Barnekow, V. 2016. Growing up unequal: gender and socioeconomic differences in young people’s health and well-being, Health Behaviour in School-aged Children (HBSC) study: International report from the 2013/2014 survey, Health policy for children and adolescents, no. 7, WHO.

Janssen, I., LeBlanc, A. G. 2010. Systematic review of the health benefits of physical activity and fitness in school-aged children and youth, International Journal of Behavioral Nutrition and Physical Activity20107:40

Janz, N. K., Champion, V. L., Strecher, V. J. 2002. The Health Belief Model in Ganz, K., Glanz, K., Rimer, B. K., Lewis, F. M. “Heath Behavior and Health Education Theory, Research and Practice 3rd edition”, Jossey Bass A Wiley Imprint, United States of America.

Kerr, J, H., Lindner, K. J., Blaydon, M. 2007. Exercise dependence, Routledge, New York, USA.

Kokko, S., Kannas, L. & Villberg, J. 2006. The health promoting sports club in Finland—a challenge for the settings-based approach. Health Promotion International, Volume 21, Issue 3, 1 September 2006, Pages 219–229, https://doi.org/10.1093/heapro/dal013

Kokko,S. 2010. Health Promoting Sports Club—Youth Sports Clubs’ Health Promotion Profiles, Guidance, and Associated Coaching Practice. Finland: University of Jyväskylä: Studies in Sport, Physical Activity and Health, 2010:144

Kokko S, Green LW, Kannas L. A. 2014 .A review of settings-based health promotion with applications to sports clubs. Health Promot Int 2014;29:494–509

Kokko, S. 2014. Sports clubs as settings for health promotion: Fundamentals and an overview to research, Scandinavian Journal of Public Health, 42, 15, 60–65.

Kokko S, Selänne H, Alanko L, et al. 2015. Health promotion activities of sports clubs and coaches, and health and health behaviours in youth participating in sports clubs: the Health Promoting Sports Club study. BMJ Open Sport Exerc Med, 0:e000034

Kokko, S., Martin, L., Villberg, J., Ng, K., ja Mehtälä, A. R. 2018. Itsearvioitu liikunta-aktiivisuus, ruutuaika ja sosiaalinen media sekä liikkumisen seurantalaitteet ja -sovellukset in Kokko, S. & Martin, L. 2018. ”Lasten ja nuorten liikuntakäyttäytyminen suomessa LIITU-tutkimuksen tuloksia 2018”, Valtion Liikuntaneuvoston Julkaisuja 2019:1.

Koski, P., Mäenpää, P. 2018. Suomalaiset liikuntaseurat muutoksessa 1986 – 2016, Opetus- ja kulttuuriministeriön julkaisuja 2018:25.

Lastella, M., Gregory D. Roach, Shona L. Halson & Sargent, C. 2015. Sleep/wake behaviours of elite athletes from individual and team sports, European Journal of Sport Science, 15:2, 94-100

Martinsen, M. 2015. Preventing eating disorders among young male and female elite athletes, doctoral dissertation, The Norwegian school of sport sciences.

Marttunen, M. 2015. Terveyserot rakentuvat jo nuoruusiässä, Lääkärilehti 12/15.

Meyer, F., O’Connor, H., & Shirreff, S. M. 2007. Nutrition for the young athlete, Journal of Sports Sciences, 25, 1, 73–82.

Milewski, M. D., Skaggs, D. L., Bishop, G. A., Pace, L., Ibrahim, D. A., Wren, T. A. L., Barzdukas, A. 2014. Chronic Lack of Sleep is Associated With Increased Sports Injuries in Adolescent Athletes, J Pediatr Orthop, 34, 129–133.

Tammelin, T. & Karvinen, J. (toim.).2008. Fyysisen aktiivisuuden suositus kouluikäisille 7–18-vuotiaille. Helsinki: Opetusministeriö ja Nuori Suomi ry. http://www.ukkinstituutti.fi/filebank/1477-Fyysisen_aktiivisuuden_suositus_kouluikaisille.pdf

Mononen, K., Blomqvist, M., Koski, P., Kokko S. 2016. Urheilu ja seuraharrastaminen teoksessa Kokko, S. & Mehtälä, A. 2016.“Lasten ja nuorten liikuntakäyttäytyminen Suomessa – LIITU tutkimuksen tuloksia 2016”

Mäkelä, K et al 2016. Physical Activity, Screen Time and Sleep among Youth Participating and Non-Participating in Organized Sports—The Finnish Health Promoting Sports Club (FHPSC) Study.

Ng, K., Mäkelä, K., Parkkari, J., Kannas, L., Vasankari, T., Heinonen, O. J., Savonen, K., Alanko, L., Korpelainen, R., Selänne, H., Villberg, J., Kokko, S. 2017. Coaches’ Health Promotion Activity and Substance Use in Youth Sports, Societies, 7, 4,

Nordic Nutrition Recommendations. 2012. Integrating nutrition and physical activity, Nordic Council of Ministers, http://dx.doi.org/10.6027/Nord2014-002

Ottawa Charter For Health Promotion. 1986. *Health Promotion International*, 1, 4, https://doi.org/10.1093/heapro/1.4.405

Porttikivi, P., Suoraniemi, S. 2018. Physical activity and perceived physical competence amongst secondary school of sports’ students. Department of Sport Sciences, University of Jyvaskyla, Master’s thesis, 86 pp. 7 appendices.

Purcell, L.K. 2013. Sport nutrition for young athletes. Paediatr Child Health 18, 2, 200-202

Rhind, D. J. A., Jowett, S., Yang, X. 2012. A Comparison of Athletes' Perceptions of the Coach-Athlete Relationship in Team and Individual Sports, Journal of Sport Behavior, 35, 4, 433 - 452.

Rossi, M., K. Pasanen, S. Kokko, L. Alanko, O. J. Heinonen, R. Korpelainen, K. Savonen, H. Selänne, T. Vasankari, L. Kannas, U. Kujala, J. Villberg and J. Parkkari. 2016. Low back and neck and shoulder pain in members and non-members of adolescents' sports clubs: the Finnish Health Promoting Sports Club (FHPSC) study BMC Musculoskeletal DisordersBMC series – open, inclusive and trusted201617:263

Ruiz, J., Castro-Piñero, E. G., Artero, F. B., Ortega, M., Sjöström, J., Suni, M. J., Castillo. 2009. Review. Predictive validity of health-related fitness in youth: a systematic review, British journal of sports medicine, 12,43.

THL. 2017. Kouluterveyskyselyn tulokset nuorilla 2017, https://thl.fi/fi/web/lapset-nuoret-ja-perheet/tutkimustuloksia

Tarokh, L. Saletin, J. M., Carskado, M. A. 2016. Sleep in adolescence: physiology, cognition and mental health, Biobehav Rev. 2016 November ; 70: 182–188. doi:10.1016

Viner, R., Macfrlene, A. 2005. Clinical Rewiev; ABC of adolescence Health promotion, BMJ, 330, 527 – 529.

Van Hoye, A., Heuzé, J.P., Van den Broucke, S. & Sarrazin, P. 2016. Are coaches' health promotion activities beneficial for sport participants? A multilevel analysis. J Sci Med Sport. 2016 Dec;19(12):1028-1032. doi: 10.1016/j.jsams.2016.03.002. Epub 2016 Mar 17

VRN. 2014. The Finnish Nutrition Recommendations – Finnish food authority. Suomalaiset ravtisemussuositukset – Terveyttä ruoasta. Valtion ravitsemusneuvottelukunta, Ruokavirasto.

WHO 2009. Global health risks, Mortality and burden of disease attributable to selected major risks, WHO Library Cataloguing-in-Publication Data

WHO 2010. Global Recommendations on Physical Activity for Health, WHO Library Cataloguing-in-Publication Data.