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Tactical metabolic conditioning for junior footballer's

Tatu Tiihonen

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Abstract

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Teacher(s) or supervisor(s) Mika Vähälummukka.	

The purpose of this work is to increase Kuopio Pallokissat football organization's coaches knowledge of endurance training and speed training in football. Most importanly how it's done by using games. Games show a same kind of efficiency as running without the ball. Games enhance the development of both technical skills and tactical awareness. Most of the coaches work as half time coaches on a volunteer basis and are often parents or other family members of the junior team players. Thesis will help them in everyday work on the training ground.

The outcome of my thesis were Power Point presentations, which has the basic information about endurance and speed training in football and how it should be done by games. One of the presentation includes drill bank. Powerpoint presentations give's tools for coaches to plan and organize tactical metabolic training better. Drill bank cover's all endurance areas and includes speed endurance and speed drill's. Drill's are planned with the tactical theme, so coach can teach the tactical side of the game at same time.

Keywords
Endurance,speed, football,game

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1 Introduction

According the latest researches, players' ability to perform in high intensity during the football match is essential. High intensity movements and maximal performances are more often deciding factors during the football match. (Mohr et al. 2003, 21, 519-528; Andersson et al. 2010, 24(4), 912-919) Even though most of time players run in low tempo. Ability perform many high intensity performances demands strong aerobic base (Bangsbo 2006, 24(7), 665-674). In football nowadays you don't have much time and space to work with the ball. Players need to be technical and tactical aware also when working with the ball, that they can find solutions and decide the games in a right way.

Idea for my thesis and practical tool came from my own experiences from my own playing career and coaching career. Many times coaches put the balls aside when staring some kind of endurance training or speed training. For young footballer's working with the ball is essential and lots of touches is needed. Also game awareness must be coached. Many times junior team training sessions don't last long and coaches have to use it wisely and plan the training session properly. We don't have time to waste. More game specific endurance training and speed training will motivate players more and when it's done correctly players are able to perform faster and last longer. And most importantly players will learn more about the game and be more wise also tactically and more skilled technically. Since there are no full-time coaches in the club, the coaches, which are often parents or family members of the players, are not expected to know what and how they should train players. All of the coaches need to have the a freedom to make the training in a way most suitable for them, but this PowerPoint presentation help all of the coaches to work towards the same goals and give idea how endurance training and speed training should be done more game specific way. Main goal is to develop footballer's not endurance athletes' or track athlete's.

2 Physical demands of football

2.1 Players moving during the games

The latest game analysis presents that players move during the matches 10 to 11 km. Top distances covered were from 13 to 14 kilometres. (Lago-Peña's et al. 2009, 218-227; Di Salvo et al. 2007, 222-227) Based on these analyses, the highest distances covered were from midfielders and from wing backs. Central defenders moved the least (Lago-Penas et al. 2009, 218-227; Di Salvo et.al. 2007, 222-227).In the first half players move more than in the second half, which is natural, thus towards the end of the game players get more fatigued. Also, the nature of the match, the team's tactics and the player's physical condition, affect the individual player's total distances covered. Still attention should be paid to timing of the movement and when needed, the ability to move in high intensity. (Rampini et al. 2007, 1018-1024)

2.2 Players movements intensity

Football player's movement activity during game are intermittent and intensity changes. In every 4-5 seconds there are changes in player's movement intensity. During game players do approximately 1300 movements in different speeds. Most of the time during the game players move in low intensity. Players walk and jog 60 per cent of the playing time. Players high intensity runs amount of the total is just a 1% of the total, but these tend to be performances that has the most effect to the score line. One- maximum - spurt duration is about 2 seconds, and these are carried out during the match 30 to 40 sprints (Mohr et al. 2003, 21, 519-528; Andersson et al. 2010, 912-919) Break between high intensity movements are usually 35-60 seconds. Wingers, wing-backs and strikers do most high intensity movements. Ability to work in high intensity during the match is very important. (Lago-Penas et al. 2009, 218-227; Di Salvo et al. 2007, 222-227).

2.3 Players movement directions, turns, acceleration and breaking during games

Most of the movements during the game happens straight forward. Defenders do more movements to the side and backwards. Midfielders do more movements straight forward than other position players. 20 % of the movement (for example jumps) where done without any clear movement direction. (Bloomfield et al. 2007a, 63-70).

Players turn 700 times during games. Defenders do most turns and midfielders the least during match. Most of the turns are below 90 degrees and turns over 180 degree are rare. Most of the turns are made with change in the speed. Analysis shows that nearly 80 percent of the turns takes place in the transition from one speed to another. Emphasis on the training should be on turns (knee and hip angles) and changes on speed. (Bloomfield et al. 2007b, Suppl. 10, abstract).

Hard accelerations are rare during the match. Usually accelerations happens from low speed. Before injuries there's are usually been hard acceleration phase and following breaking phase (Carling, Gall & Reilly 2010, 180-185).

2.4 Physical fatigue and stress during the matches

As already stated above, the movement of players during football match is cyclical and varied. Although football can be characterized as the speed endurance sport, it also put high load on aerobic energy production, because of the duration of the matches. (Bangsbo et al. 2006, 665-674).

Players average work intensity during matches is around anaerobic threshold. Average heart rate is about 85 % of the maximal heart-rate. During the match, the player's heart rate drops rarely less than 65% of your maximum heart rate. (Bangsbo et al. 2006, 665-674). Game -term oxygen consumption is not measured by direct methods during the match, but it has been estimated from the heart rate and body temperature that player's maximal oxygen uptake is about 70 % from VO2max. (Bangsbo et al. 2006, 665-674; Mohr et al. 2004, 156-162). During the match, the top players perform an average of

150-250 short and intense performances (Mohr et al., 2003, 21, 519-528). Because of this also anaerobic energy production is used during the game. Lactate levels of players during the match varies with 2-10 mill moles / litre between and the peak values of more than 12 (Bangsbo et al. 2006, 665-674).

2.5 Energy consumption, income and sources

Male player's energy consumption during matches is an average of 1600 kilocalories (Fifa f-marc 2005) Muscle glycogen stores are footballer's main energy -sources. During the match, glycogen stores are cleared partially or even completely, especially if the game is pre- glycogen in the body is low. (Bangsbo 2006, 665-674).

During the match, the blood free fatty acids increases, especially in the second half (Krustrup et. al. 2006). On this basis, the energy generated during the match also from fat stores. Shephard (1999) the proportion of fats in the energy output can be up to 40%. Free fatty acids release is enhanced especially during the low intensity phases of the match. (Bangsbo et al. 2006, 665-674).

During the match anaerobic phases, the energy is produced from the body's ATP- and KTP storages (Alactate) or during longer high intensity performances from execution of anaerobic glycolysis (lactate). After the match, the body's Kreatitinephosphate storages can be degreased about 60 per cent of the resting values (Bangsbo 2007, 111-127).

3 Football player analysis

3.1 Anthropometry

Top Soccer Player:

- 10-11 Fat percent %
- maximal oxygen uptake of 60 ml / kg / min
- 30 meters running test under 4 seconds
- lightening jump test, 45 cents

(Suomen palloliitto koulutusmateriaali, 2014).

3.2 Aerobic and anaerobic performance

Footballers maximal oxygen uptake (VO2max) has been found to be about 60 ml / kg / min, which is the other team sports athletes equivalent, but clearly, for example lower than endurance athletes (Reilly et al., 2000). Best value can be found from the midfield player's (Sporis et al. 2009, 1947-1953; Arnason et al., 2004, 278-285).

8 weeks special training period to develop maximal oxygen uptake capacity, have been found to have positive impact on the distance moved during the match, work effort, amount of maximal short sprints and players time with the ball (Helgerud et al, 2001, 1925-1931).

It is clear that the top football players must have an adequate oxygen uptake, so that they are able to work at high intensity for longer, recover more quickly from intense periods of the game, as well as to work more effectively at the end of the match. Since most of the top players from the measured values exceed 60 ml / kg / min, this is the proposed limit value for top-level footballers (Reilly et al. 2000, 669-683).

Football player's anaerobic threshold was found to be about 90% of maximum to 79% of the maximal oxygen uptake (Casajus 2001, 41(4),463-469, abstract).Kalapotharakos et al. (2006, 515-519, abstract) study found that the anaerobic threshold and the run-

ning speed responsible for that level was one of the factors that separated the top-level players weaker.

Top players endurance abilities are measured a reasonably many ways by develop Yo-yo test developed for the footballers (Bangsbo 1996, the so-called. beep-test).

In Finland, team more commonly uses the test's continuous versions (Yo-Yo Endurance Test, Level 1 or Level 2). International club team uses more versions of the test's sequencing versions (Yo-Yo Intermittent Endurance test, or Yo-Yo Intermittent Recovery Test).

Metaxas et al. (2005, 19(1), 79-84) are the only ones that have presented research of the test which is more generally used in Finland, the continuous Yo-Yo Endurance test. In their study young Greek footballers (average age 18 years) ran result average 13.28 minutes and estimated maximal oxygen uptake was 56.3 ml / kg / min. The test was developed by Bangsbo (1996). Top players average results were 15 minutes 18 seconds, which reflects the maximal oxygen uptake value of 62.5 ml / kg / min.

The two sequential Yo-Yo test, less internationally reported of the two, seems to be Yo-Yo Intermittent endurance. Test area is 2 * 20 meters. After each run players keep 5 second pause before the next "shuttle" run. According to Bangsbo (1994), the test evaluates an individual's ability to perform many short runs in a long period. Youth top players (Level 1) average was 15 min 41 s (Metaxas et al., 2005). Bangsbo's top player's average of the test on the second level (Level 2) was 2280 m (~ 14 min 10 s).

Yo-Yo Intermittent Recovery Test (YYIR) is a test version, where running speeds are higher than in the previous version, and after each run 2 * 20 meters theirs is 10 second pause. This test measures an individual's ability to run in high speed in many times (Bangsbo, 2008, 37-51). From the three different versions, The YYIR is clearly the most used test in international studies. World-class top players ran the tests first level an average of 2420 m (~ 19 min 30 s), and the second test at the level of 1260 m (~ 9

min 20 sec) The percentage difference to the average level professional players in these tests is approximately 10% (Level 1) and 20% (Level 2). (Bangsbo et al., 2008, 37-51).

3.3 Speed

Speed tests used internationally differ from tests which are used in Finland. In Finland, the players speed is normally measured in 10 and 30 meters distances, as well as agility is tested on a special test track.
Internationally more commonly used distances are 5, 15, 20 and 40 meters and different agility test. In Modern football, especially 10 meters test results have relevant information, as required maximal during the game to performance are often short (Stølen et al., 2005, 501-536). Cometti et al. (2001, 45-51) study found that the top players were faster in 10 meters, but not in 30 meters as compared to the lower leagues players.

4 Games for conditioning

Games and small sided games are football-specific training method.
Planned to develop technical, tactical, and physical abilities. Football-specific training drills with the ball can be affected to provide different physical, technical and tactical responses by several factors. Changing the number of players involved, the size and the shape of the pitch, the duration of exercise and rest periods, the rules of the game, coach encouragement, and availability of balls or by the way of scoring points are good ways to affect the game. A better understanding of these factors will assist coaches to achieve their training goals. (Bangsbo, 1994, Suppl 619:1–156; Balsom, 2000; Hill-Haas et al, 2009a, 111–115).

4.1 Changing the number of player

Large number of study results suggest that small-sided games with a smaller number of players, statistically increase the blood lactate concentration. The study's shows that in small-sided games, the blood lactate values range between 2.6 and 8.1 mmol/L. Higher intensities was achieved from games with 1-a-side to 3-a-side. In these games, values closer to 90% HRmax, were achieved, which represent the ideal values for high-intensity endurance training and for the lactate system. Games with a larger number of players tend to decrease the heart rate. (Filipe M et al. 2014, 77-79).

4.2 Changing the field dimensions

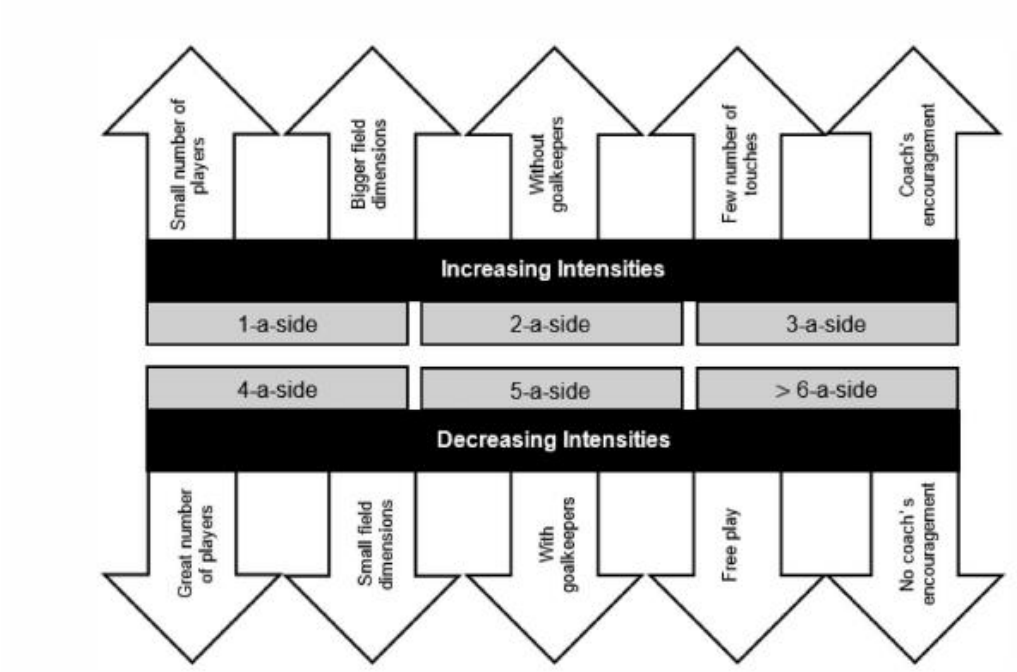
Most studies report an increase in % HRmax, blood lactate concentration, and rate of perceived exertion in small sided games played on fields with larger dimensions. (Filipe M et al.2014 78-80).

The results also shows that greater field dimensions increase blood lactate concentration values. It is possible to control the blood lactate response to the differences in the

field dimensions. It is possible that bigger field dimensions increase the blood lactate concentration because of the increased space each player must cover and the decreased opportunity for recovery. (Filipe M et al. 2014, 78-80).

4.3 Changing the rules

Using goalkeepers. Large number of study's shows that higher intensity in the games was achieved without goalkeepers. At times, the coach can also affect the game by giving the rule that each player can only perform a given number of touches on the ball. Decreasing the touches increases heart during small-sided games. (Filipe M. et al, 2014, 79-81).



(Filipe M et al. 2014, 82).

5 Children and adolescents physical development

Versatile training supports the development of children and adolescents. Children and adolescents training must versatile that it develops a wide range of skills and physical performance. For coach, it is important to know the physical characteristic's related to the development of the sensitive periods and emphasize them in the training. Only knowing length and weight growth is not enough. Neuromuscular structure and it functions during movement must be known (Hakkarainen et al. 2009, 73-75).

The body's growth in children and adolescents is relatively smooth with the exception of puberty age. There's a clear increase and acceleration in both girls and boys growth. Finnish girl's high growth phase has an average age of 12 and boys at age 14. After this, the weight and strength gains peaks following every six months. Individual differences in growth are large. In everyday spoken language age means calendar age or chronological age. However, it is only a rough approximation of the biological age, because of the changes in individual biological growth schedule. Chronological age and biological age can differ up to three years in either direction. In other words, for example, 12-year-old may be in the development of a 15-year-old, or in the 9-year-old. In the same age group there may therefore be between two players up to a six-year maturity difference. (Hakkarainen et al. 2009, 73-75).

5.1 Sensitive periods

In children and adolescent's training, coach must take in consideration.
Sensitive periods. There are sensitivity periods in the growth of an athlete when different physical attributes are more trainable such as movement skills (e.g. agility,coordination, balance), basic sport skills (e.g. throwing, running) and physical capabilities (e.g. strength, speed, endurance). Sensitive Periods are based on different body tissues growth schedule. (Hakkarainen et al, 2009,140-141).

5.1.1 Sensitive period for Speed

Speed training must be started at a very young age and use of sensitive period is necessary to gain the most out of speed training. Speed is a very strongly inherited ability from parents. Speed is affected by frequency of movement, ability to react, sense of rhythm, skill and strength. All those aspects except strength need to be focused in training before athlete hits puberty as their development is dependent on functional ability of nervous system. Strength training should be started when sensitive period for strength happens and not much before. (Hakkarainen et al. 2009, 141).

5.1.2 Sensitive periods for Endurance

Endurance training of children and youth builds an overall base for future athletic ability. Functionality of heart starts from infant and develops steadily until end of puberty. This development occurs especially in strengthening of heart muscle cells and development of cardiac stroke volume. Thickness of capillaries, the amount of aerobic enzymes and lung capacity are big contributors to endurance and are developed already at An early stage of life if provided enough aerobic training stimuli. (Hakkarainen et al, 2009, 141-142).

Endurance training and activity are important daily routines. 30-60 minutes of aerobic activity should be done in some form every day. Anaerobic training should not be done before puberty as child's body is unable to properly handle formation of lactic acid from anaerobic training. Instead it is recommended to train speed-endurance in short periods of time (10 seconds of intense work with 20-60 second recovery period) without accumulating lactic acid. Anaerobic training before puberty on purpose is not recommended and can in fact do more damage and affect the development of other attributes. (Hakkarainen, et al 2009, 142).

6 Characteristics of endurance and speed in football

6.1 Endurance

Player in the game

Stationary about 15 minutes.

- Walking about 35 minutes.
- Jog about 25 minutes.
- Run hard about 10 minutes.
- Sprints about 5 min.

(Avg. 5 to 15 m by 40-70 times)

- Moves during the match Approx. 11 - 14 km
- Average power: 75 % of the maximal oxygen consumption Vo2max

(Suomen palloliitto koulutusmateriaali 2014)

Endurance refers to a player's mental and physical ability to resist fatigue in the long term. Big amount of training is needed for endurance training. Only year-round endurance training guarantees optimal development for endurance abilities. There's no short cut about the amount of training what is needed. Also it's important to take care of all areas of endurance training. Endurance is divided to 3 type of aerobic endurance areas Long, Slow Distance Training –Pace/Tempo Training –Interval Training and for lactic Speed Endurance (Riski 2009, 285-286).

6.1.1 Basic endurance

Basic endurance means players ability to keep up stress up to 30 minutes and over and recover fast as possible from training sessions and from matches. Basic endurance training creates foundation to player to do more high powered endurance training. Basic endurance training is the base, where all the other endurance abilities are built on. (Riski 2009, 297).

The basic endurance training few main goals are to increase stroke volume of the heart increase cardiac output as well as total mitochondrial volume in the muscle fibres used in the training (i.e. the thigh muscles in runners will have more mitochondria than the thigh muscles of swimmers). Mitochondria increase in both number and size and there are similar increases in myoglobin and oxidative enzymes. The muscles heighten their glycogen and fat storing capabilities in endurance athletes in order to increase the length in time in which they can perform work. (Riski 2009, 297).

Long and slow endurance training improves basic endurance. Amount of training is thought to be important for endurance abilities improve. Because to improve basic endurance ability, player needs high amount of training sessions. It's important that players learn to do own basic endurance training on their spare and free time. Long and slow jog over 30 minutes is enough to develop the ability, but when body gets used to 30 minutes, jogging time should be increased. Then development will be more progressive. (Riski 2009, 297).

6.1.2 Pace and tempo endurance

Pace and tempo endurance means players ability to keep up with higher pace as much as possible and also the ability to recover from longer and higher tempo periods in the match. Pace and tempo endurance training affects to same physiological factors as basic endurance training. Pace and tempo endurance training is more high intensity area and produces energy differently. In pace and tempo endurance training body starts to use carbohydrates more in the energy production and only uses fats about 30% percent. (Riski 2009, 298).

In pace and tempo endurance training body develops lactate and because of that also body mechanics to decrease lactate improves. Pace and tempo training can be done in two ways. As a continuous training 20-60 minutes or 10-15 minutes interval training. Higher intensity can be maintained in interval training and it's more specific way to practice. (Riski 2009, 298).

6.1.3 Maximal endurance training

Maximal endurance training means players ability to work with high lactate levels. This occurs during football matches, when high intensity periods are played. Top players average heart rate during match is around 85% of maximal heart rate. This heart rate is on maximal endurance area. Training goal for maximal endurance training is to improve cardiovascular capacity and improve vo2max. Top players maximal vo2max is around 60-70ml /kg/min. On muscles maximal endurance training affects both on aerobic and anaerobic abilities. On maximal endurance training energy is produced mainly from carbohydrates. (Riski 2009, 299).

Maximal endurance training can be done as continuous training 10-20 minutes or as an interval training. Interval training suits better for football, because it's changes in intensity. During interval training higher intensity's can be reached. (Riski 2009, 299).

6.1.4 Lactic speed endurance

Speed endurance is divided to alactic speed endurance training and to lactic speed endurance training. In alactic speed endurance training energy production is based on body's immediate energy sources ATP and KP. These energy production mechanisms are typical for sports which demands high speed. This is also reason why alactic speed endurance are considered to be under speed abilities.
Lactic speed endurance energy production is based on glycogen, which is more typical for endurance sports (Riski 2009, 312-313).

Lactic speed endurance means ability to recover fast as possible from high intensity periods of the match and ability to work in high intensity as long as possible. Lactic speed endurance training improves anaerobic energy production, performance economic when working with high intensity's and body's ability to buffer lactate. (Riski 2009, 312-313).

6.2 Speed

Things that affects speed

1. High fast cell ratio
2. Strength
3. Activation of fast motor units
4. Elasticity
5. Relaxed muscle activity
6. Joint flexibility
7. Running technique

(Hakkarainen 2009, 219).

Speed is known to be strongly genetic and it comes as a heritage. Because of this, it's easiest to get biological changes and do modification when players are young kids. Children speed training is very important and it's hard to compensate any neglecting towards speed training when players are older (Hakkarainen 2009, 219).

6.2.1 Maximal velocity

Maximal velocity means fast moving to from place to another and maintaining the pace while moving (Mero et.al. 2007, 293).

Movement speed is cyclic so movement's range of motion repeats itself many times. Running speed is the interaction of stride frequency and stride length. Maximal velocity is divided to three phases depending of duration. Phases are acceleration, maximal speed phase and decreasing speed phase (Mero et.al. 2007, 293).

Acceleration phase means time or length when maximal velocity is reached or almost reached. In maximal speed phase, pace stays fast as possible or near it. In Decreasing speed phase, the maximal velocity no longer stays near maximal and fatigue drops the

intensity. In football it's important to focus on every phases of the maximal velocity also decreasing phase to prevent injuries. (Mero et.al. 2007, 293).

6.2.2 Explosive speed

Explosive speed means movement, which is short and fast as possible. Explosive speed performances are acyclic, which means they are short and single movements for example kicks, jumps and throw-ins. Explosive speed as many similarities to speed strength training and maximal strength training. It develops in same way as these strength abilities. Explosive speed short bursts should also planned carefully when planning and programming football conditioning. Ratio between duration and rest must be accured and full. Too long performance or too short recovery time don't give body enough time to refill ATP AND KP storages. (Mero et al. 2007, 293.)

6.2.3 Speed with skill

Speed with skill is ability to transfer speed to sport specific performances. Neuromuscular system ability to work fast in performances that demands skill. (Hakkarainen 2009, 222)

6.2.4 Reaction speed

Ability to react is ability to react fast as possible to certain sensory stimulus. (Audio, visual, touch). Reaction speed mean time, which goes from stimulus to action. Good reaction ability is very important (Hakkarainen 2009, 222).

6.2.5 Alactic speed endurance

Speed endurance is divided to alactic speed endurance training and to lactic speed endurance training. In alactic speed endurance training energy production is based on body's immediate energy sources ATP and KP. These energy production mechanisms are typical for sports which demands high speed. This is also reason why alactic speed endurance are considered to be under speed abilities. (Riski 313-314 2009).

Alactic speed endurance training improves neuro-muscular abilities to modify itself to performance speed. Also improving relaxation and maintaining it. It's important that player can perform many short, fast and high intensity performances even though player is tired. Although this is called alactic speed endurance, there's still little lactate production, that's why it's important to plan carefully work and rest ratio. (Riski 313-314 2009).

7 Main Principles for developing physical abilities

7.1 The Individuality

Training affects every person individually. The body's response to training stimulus varies based on age and stage of development, training background and structural differences. Especially for young people in training, this should be taken into account. Team players chronological and biological age may vary by up to 2-3 years. Similarly, the condition of the players varies significantly. (Hakkarainen 2009, 195).

7.2 Progression

Steadily improve the fitness levels of your athletes, you must continually increase the physical demands to overload their systems. If the training demand is increased too quickly, the athlete will be unable to adapt and may break down. If the demand is not adequate, the athlete will not achieve optimal fitness levels. (Hakkarainen 2009, 195).

7.3 Super compensation

The principle of super-compensation is based on the fact that an athlete will adapt to training stress. In order to experience super-compensation, an athlete will pass through a period of fatigue, then a period of enhanced fitness once recovery is allowed. (Hakkarainen 2009, 195).

7.4 Specificity

Specificity refers to the type of changes the body makes in response to sports training. Very simply, what you do is what you get. When an athlete trains, he or she repeatedly performs activities to prepare for the exact requirements of the sport. In time, the athlete's body becomes better able to meet the demands of the sport as it adapts to the training regimen. (Hakkarainen 2009, 195).

7.5 Recovery

Sufficient recovery (rest, sleep, nutrition, stretching) is essential for the development. Development takes place precisely at rest. Over-recovery, however declines fitness levels just after two weeks. (Hakkarainen 2009, 195).

7.6 Junior players training principles

Player growth and development growth spurts must be taken into account in training. Training must always be varied and adequate. Motivation, versatile training, and positive feedback are key issues for children and young people. (Jaakkola 2009, 334-335).

7.7 Testing

Training effectiveness must be controlled by testing the player's regularly. Different abilities is recommended to test at least 2-4 times a year. When considering the tests, player age and sensitivity periods must be taken into account. (Suomen Palloliitto valmentajakoulutus materiaali 2014).

8 Periodization of training

Coach must plan training from one single training for long term plan very carefully. Learning new skill takes time and modification of an old skill takes time. Enough repetitions is needed to learn the skill and automation of the skill takes even longer. Only way to get enough repetitions in sensible amount of time is prioritise training and choose clear objectives and few main points to 6-8 weeks training periods. Focusing only few main points makes it possible to athletes to get enough repetitions about the subjects. To develop the skill should be trained 2-3 times a week. Sensitive periods should be considered when planning objectives. (Forsman, Lampinen 2008, 412).

8.1 Long term plan

Long-term plan goal is to plan objectives for several years term. The plan will set annual priorities and objectives and must take into account the non-sport issues, such as school attendance. (Forsman, Lampinen, 2008, 412.).

8.2 Year plan

Annual plan is one year plan, which defines all the smaller periods' focuses and goals. The annual plan shall indicate what issues will be developed during the year and what is maintained. Exercises and drills will of course be designed so that they develop within the annual plan more challenging when season gets forward. (Forsman, Lampinen, 2008, 412).

8.3 Period plan

Year Plan is divided into four to eight weeks of the training session, which is selected from a number of priorities. Half of the time should be used for the priorities chosen and the rest of the time practicing other things to maintain. Section of the plan should include an analysis of the current situation, that is, the reasons for further training. For example, if the players have not yet internalized the one against one situations quality factors, it is useless to go yet more challenging drills, such as the two-on-one play. Period of the plan will also be a few weeks of rhythm. For example, every other week can

be tough, and every other light. It is recommended that a light week, for example, one exercise less. (Forsman, Lampinen, 2008, 412).

8.4 Weekly plan

The weekly rhythm controls training load and recovery, and thus ensure the adequate development of the athlete. Weekly rhythms should be considered an athlete's other life and other daily routines. In week plan, order of exercises is important. Speed and skill demanding exercises should always do a fresh and in recovered state. The coach must take into account that player will recover from harder training and this way has a chance to develop and remain health. (Forsman, Lampinen, 2008, 412).

8.5 Individual training session plan

An individual training plan is an accurate and specific description of what the training is all about. The training plan must explain the reason for the goal of the exercise, what exercises to develop. The exact training plan includes a full workout with the whole warm-ups and cool-downs (Forsman, Lampinen, 2008, 412).

9 Empirical part

9.1 Functional project

Functional thesis purpose is to instruct, guide and rationalize at work. Functional thesis starts with the idea and next phase is to make plan of action. Its purpose is to be aware of the objective of the thesis and to respond to what is done and why.

10 Project planning

The aim of this project was to produce a theoretical and practical framework to improve football club's coaches' knowledge of speed and endurance training. The plan was to write a power-point presentation that covers basic aspects of physical training development and how to do it more sport specific way and then present it to Kuopio Pallokissat football club coaches. Also to help coaches to understand. Idea is to keep practical training session after the presentation.

The project started with the idea and experience what I had seen on training grounds. Most of the coaches work as half time coaches on a volunteer basis and are often parents or other family members of the junior team players. So to improve everyday work in the club, I thought it would be good idea introduce them to the subjects by Power-Point presentation. PowerPoint presentation objective is to give tools for coaches to plan and organize tactical metabolic training better. It also gives information on how to develop the players in age appropriate way by using sensitive periods.

The aim of this presentation was to collect the essentials and facts about training principles of speed and endurance training. After the guidelines for the project were created, the research for the sources of information for the PowerPoint presentation started. The presentation is meant to give a comprehensive view about the facts that are included in soccer player physical development, from the basic physical training principles, to what aspects should be taken into consideration at each age group in junior coaching.

4.2. **Project implementation**

The foundation for this project to improve club Kuopio Pallokissat everyday work with the young girl footballers. I know from my own football career and now from my own coaching career that many times the coaches uses too much time to train endurance training without the ball and also there's not always any knowledge behind the

exercises about the basic principles. Especially for young players it should be that football training is conditioning and conditioning is football training. All conditioning exercises should be more game specific. The purpose was to collect as much information as possible about the game, the player physical development, the development of the body system and the process of growing to be complete soccer player.

4.3. **Project Assessment**

Writing the PowerPoint presentation for the Kuopio Pallokissat was first little a bit difficult, because it's always easy to spread the information to too widely. But I think I got the information is summarized, so the reader will not get bored and the text is easy to read and easy to understand. I think I was able to achieve my goal and cover the basic information that is important to know and it's easily taken to the training ground. Hopefully this means that eventually after the presentation we can get better, faster, harder and more skilled players than before.

I think final kick to me to start writing this project was Uefa B- coaching course, during the last spring and summer where I got more information how game specific training is done. Now I can combine what I have learned in Vierumäki and what I learned from Uefa B course and put it all together. After writing the Presentation I'm relieved. I'm now excited to present it how and it will be fun to see if it helps coaches and players development to become better in what they do.

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