

Kettlebell Training for Basketball

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Bachelor's Thesis

Degree Programme in Sport and
Leisure Management
2010



Degree Programme in Sport and Leisure Management

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<p>The title of thesis Kettlebell Training for Basketball</p>	<p>Number of pages and appendices 57</p>
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<p>The objective of this project is to help basketball players to become better players by improving their athletic appearance, and to provide players and coaches with the teaching video that will include the technique points and lifts that are useful for basketball players.</p> <p>The video consists of three main chapters: written part, introduction, and exercises. Each chapter is divided in subcategories. Written part includes information about safety procedures, learning and teaching the lifts, and injury prevention.</p> <p>Exercises are divided into the main lifts and their variations. Exercises follow the order from basic to more advanced lifts in order to present the material in the most logical and orderly fashion possible to facilitate the learning process. Athletes from all the levels are able to get a really demanding workout from these exercises.</p> <p>Kettlebell training is a great way to accomplish more things in less time. Kettlebell is a great tool for all-around physical development. It develops athletic qualities needed in basketball, such as muscle strength and endurance, flexibility, cardiovascular endurance, stability, coordination, power, and mental toughness. Some benefits are psychological; athletes will notice that strength training is fun again, just as it was when they first started.</p> <p>The video was made for basketball players and coaches but athletes from all the sports can gain some benefits with the lifts presented.</p>	
<p>Key words Kettlebell, basketball, physical training</p>	

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<p>Tämän projektin tarkoituksena on auttaa koripalloilijoita kehittymään pelaajina parantamalla heidän fyysistä olemustaan. Samalla pelaajat ja valmentajat saavat itselleen opetusvideon, mikä sisältää harjoitteet ja niiden oikeaoppiset tekniikat, jotka ovat hyödyllisiä koripalloilijoille.</p> <p>Video koostuu kolmesta osiosta: kirjallisesta osiosta, johdannosta sekä harjoitteista. Kukin osio on jaettu alaotsikoihin eri sisältöineen. Kirjallinen osio sisältää tietoa turvallisuus seikoista, harjoitteiden oppimisesta ja opettamisesta sekä loukkaantumisen ennaltaehkäisystä</p> <p>Harjoitteet on jaoteltu pääliikkeisiin ja niiden variaatioihin. Jotta oppimisprosessi olisi paras mahdollinen, liikkeet aloitetaan aina järjestyksessä yksinkertaisemmasta haastavampaan. Pelaajat jokaiselta tasolta kykenevät saamaan erittäin haastavia harjoitteita kyseisistä liikkeistä.</p> <p>Kahvakuulaharjoittelu on erinomainen tapa saavuttaa enemmän asioita vähemmässä ajassa. Kahvakuula on erinomainen väline kokonaisvaltaisen fyysisen kehityksen kannalta. Se harjoittaa koripallossa tarvittavia fyysisiä ominaisuuksia, kuten lihasvoimaa ja kestävyyttä, liikkuvuutta, aerobista ja anaerobista kestävyyttä, tasapainoa, koordinaatiota, räjähtävää voimaa ja henkistä lujuuutta. Joillekin edut voivat tulla psyykkiseltä puolelta; pelaajat huomaavat voimaharjoittelun olevan jopa hauskaa, aivan kuten se oli ensimmäisillä kerroilla.</p> <p>Tämä projekti on suunnattu koripallon pelaajille ja valmentajille, mutta jokaisen urheilulajin edustajat kykenevät tukemaan omaa lajiaan videossa esiintyvien harjoitteiden avulla.</p>	
<p>Key words Kahvakuula, koripallo, fyysinen harjoittelu</p>	

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1 Introduction

Kettlebell is a centuries-old training tool originally from Russia. However, it has just started to come into the spotlight. Over the past few years, kettlebell is becoming increasingly popular in the fitness world. People have noticed that kettlebell training is a practise method that would increase physical appearance in such a versatile and challenging way. It can be practised in such many places and the only thing is needed, is a kettlebell. (Cotter 2007; Tsatsouline 2006, introduction.)

What kettlebells actually do? Kettlebell training focuses on whole body strength. Athletes are learning to make the body stronger by teaching the muscles to be more coordinated to learn how to work together as a unit. Human body can be described as a kinetic chain. Muscles, fascias, tendons, ligaments, and other parts of the soft tissue form a cohesive unit and we want to learn how to use these different body structures together. You can think about the kinetic chain as a one muscle that goes from fingers to toes. When a part of this chain is weak or damaged, it will affect other parts of the chain and probably leads to an impaired performance and risk of getting injured. As the saying goes "You are only as strong as your weakest link". What makes the kettlebell lifting so effective is that it identifies and strengthens those weak links in the body, so that the whole body becomes a connected, effective, kinetic chain. (Arvonen & Kailajärvi 2002, 16-19; Cook 2003, 18; Cotter 2007.)

Functional training needs to be considered in athlete's workout. Functional training emphasises practising a movement in all the planes of motion. These planes of motion are sagittal plane in which the movement is linear, frontal plane in which the movement is lateral, and transverse plane in which the movement is rotational. Human movement is always a combination of all these planes, and that is why practising should always consider on improving performance multi-directionally. (Paavola 2008; Aaberg 1996, 17-32.) If you want to be a great basketball player, you have to train your body the way it moves on the court (Cook 2002, 148).

Traditional weightlifting concentrates on leverage and static fixed positions that work in a single plane of motion, which is sagittal. If you think about basketball, a lot of injuries occur in the transverse plane which traditional lifting does not target. Kettlebell lifting is the antithesis of traditional weightlifting which enables athletes to use all the planes of motion simultaneously.

The way an athlete moves, not the way an athlete looks, defines the athlete. Most athletes have a misconception that if they will get their muscles bigger they will also perform better on the court. This is one of the reasons that lead basketball players to lift like bodybuilders. Most of the bodybuilders focus on isolating the muscle. This kind of exercise is designed solely to build a muscle targeted at winning a contest or pleasing a mirror. However, it does very little for athletic performance and functional strength, which is an ability to utilize strength for the demands of basketball. Sport training should focus on movement patterns rather than individual muscles. There is no such thing as isolated muscle work in kettlebell lifting. (Boyle 2004, 1-4; Cook 2003, 5.)

In functional training it is essential to understand the role of each body part as a part of the kinetic chain. You need to understand how they affect to the other parts and how they work together. Human body can be divided into the five anatomically important areas that need to be considered in training: ankle, knee, hip, lumbar vertebrae, and thoracic vertebrae. Ankle requires mobility in all the three planes of motion and stability, knee requires mobility in sagittal plane and stability in frontal and transverse plane, hip requires mobility in all the three planes, lumbar vertebrae requires stability in all planes to be strong and effective part of the kinetic chain, and thoracic vertebrae requires mobility in all the three planes. (Paavola 2008.)

If one area of the body is limited by mobility, it will more likely have an effect on the other areas in a negative way when the optimal performance cannot be obtained (Arvonen & Kailajärvi 16-19).

Usually athletes who perform poorly or get injured have four weaknesses in common; muscle imbalance, poor core stability, poor balance, and lack of strength. This video shows you how to get better on these areas.

Kettlebell training focuses on working both sides separately, and this forces them to work the equal amount. Barbell lifting or most exercises done in machines, will not allow both sides to work separately. As an example, when doing barbell curls, your right arm might be stronger, and as you fatigued, you are working more with the right arm in order to finish the repetitions. So, this way of training will not necessary show you the side differences and the risk of getting injured is bigger. A rule of thumb is to double the amount of volume for the weaker side, until the gap between side differences has diminished or they are even. Muscles and tendons work together to form a one cohesive unit. If some muscle group is weak, some other muscle group

needs to work harder than it normally would, which causes unwanted stress on the joints (Arvonen & Kailajärvi 2002, 18-19; Cotter 2007).

Contrast to dumbbell training, because of the handle, kettlebell enables to lift in such a versatile way and is unstable at all time. Dumbbells are designed so that there is an even weight on both sides to balance the weight. This is the reason why dumbbells are not able to target the stabilizing muscles of your body at the same degree with kettlebells. The basic lifts of the kettlebells can be done with dumbbells but the benefits are not the same. Think about it this way: you are able to run on a flat even surface as well as you are able to run up a steep uphill rugged terrain. Running in these conditions might even look the same but running up a steep uphill is much more demanding.

Good form and the right technique of the kettlebell lifts are really important. Always get the technique right of each lift before moving into more demanding lifts. The principle of lifting technique is to lift the heaviest weight with the least energy expenditure (Arvonen & Kailajärvi 2002, 77).

Through repetitions of drills, athletes will learn the best way. “Learning movement patterns is ultimately and unavoidably a matter of quality repetition, feedback and effort. There will never be a substitute for time and hard work.” (Olympic weightlifting, 2008, 17.) Patience, consistency and commitment will deliver the athlete remarkable results. When athletes get tired, this is the time when most of them get hurt on the court. So, while the athletes go through hard and demanding exercises, they really need to concentrate on the right technique. It is like a tight game; even though athletes get tired, they cannot afford on any mistakes.

The human body can produce energy aerobically (in a reaction that requires oxygen through breathing, in which fat and carbohydrates are chemically broken down) or anaerobically (without oxygen in a chemical reaction, in which high-energy phosphates (ATP and CP = creatine phosphate, and/or glycogen) stored in the muscle are broken down). (Westerlund & Summanen 2001, 15.)

Aerobics has to do with your cardiovascular capacity, the ability of your heart and lungs to circulate the oxygen throughout the body. Anaerobic conditioning is dealing more with explosive movements and it also works with high contractile strength, in other words the ability to run fast, to jump high and to lift heavy weights. Basketball requires both of them,

aerobic and anaerobic conditioning. A great benefit of kettlebell lifting is that it trains simultaneously both of them together.

The exercises in this video concentrate on movements through body's natural range of motion, not body parts. This project was originally designed to help basketball players but anyone can benefit from the same techniques which you will learn in the project and video.

2 Safety procedures

Properly used, kettlebells are surprisingly safe. Voropayev's research showed that only 8.8 percent of top Russian gireviks, members of the Russian National Team and regional teams, reported injuries in training or competition. This is surprisingly low number, if you consider that they are elite athletes who push their bodies over the edge. (Tsatsouline 2006, XVII.) Most of the injuries will most likely occur among the novice lifters.

However, whether you are an elite or a novice athlete, it is still a cast-iron ball and swinging it wrong way can lead to severe injuries and cause damage to your surroundings.

2.1 Foot wear

The best way to lift kettlebells is barefoot. Feet are one of the most important proprioceptive device in our body. Without the shoes you are able to feel how your body is responding and this way you are going to learn much faster and adapt to the movement to perform it more effectively. It is the foot inside the shoe that makes you fast and powerful, not the shoe on the foot. (Rooney 2009).

Another reason why athletes should train barefoot is to strengthen their feet. Foot contains a lot of muscles and it will get weak if there will not be any strengthening exercises for them. Weak muscles in the foot cause the false anatomical alignment in the bones of the foot, tibia, fibula, and the femur. This is a common reason for foot, ankle, knee, and even hip injuries. Remember to think about the human body as a kinetic chain; problem in one area of the body will affect on the other areas as well. So, try to lift always without shoes. (Arvonen & Kailajärvi 2002, 16,18.)

However, it might not be suitable in all training environment such as public training facility. If you are using shoes, they should be flat without cushy soles. "If you are wearing shoes with a heel, it actually elevates your body and the centre of mass is shifting forward. Because of this you might be changing the mechanics required and this can over time create structural problems." (Cotter 2007). Basketball shoes are made of cushy soles, so I wouldn't recommend them if you are lifting with heavy kettlebells. Instead of cushy soles, hard soles do not compress under heavy loads. Hard soles do not eliminate the instability found in soft-soled

shoes and they ensure that generated force is transferred more completely from the platform to the kettlebell (Cotter 2007).

2.2 Hands

The best thing is not to wear anything. Lifting gloves shouldn't be used (unless you have serious calluses). It is the same reason as with the use of shoes. There is a constant two-way conversation between the body and the brain. Like Steve Cotter states in his video,

The hands as well as the feet contain tremendous number of receptors. Receptors are part of the nervous system and there is a constant communication that occurs in your body and central nervous system (CNS) which is the brain and spinal cord. CNS is constantly sending information to the hands and they are sending information back to the CNS. So, when you are wearing gloves, you are actually inhibiting the senses and you are limiting the amount of information that can communicate between your hands and CNS. (Cotter 2007.)

When you are training and the intensity grows, you start sweating and the kettlebell can be slippery. That is why it's good to wear chalk. Chalk will improve the grip on the kettlebell by keeping the hands dry as well as provide some protection from handle friction. Chalk can be used in three primary places: hands, the kettlebell, and clothing from kettlebell and hand contact.

Being covered in chalk and rubbing against the kettlebells for hours every week will not do good for your hands. Calluses, blisters and tears will be commonplace, especially for the novice lifters. That is why the hands need to be taken care of well to prevent the disruption of training. Even minor wounds can prove painful enough to directly prevent a successful lift. Hand care can be divided into two parts: prevention and correction. Corrections are never perfect, so the best strategy is to avoid needing them as much as possible. A preventative hand care is to keep the palms smooth and free of any hard, sharp edges, and to keep them adequately moisturized. If you start getting calluses, try to smooth them out so they won't tear. These calluses can be kept smooth by regularly sanding them down with fine-grit sandpaper. (Everett 2008, 23, 227-229; Tsatsouline 2006, 32-33.)

2.3 Training environment & Clothing

Make sure you have enough space around you when you start lifting kettlebells. Lift in a place where there are no concerns about property damage or injury to anyone. So, do not lift in an area where there are people moving around you. You can lift indoors or outdoors. If you are lifting indoors, you want to pay attention to the floor. It needs to be solid and in case you might drop the kettlebell, there should be a pad: a rubber mat or something that will protect from any damage to the environment. If you are lifting outside, make sure to train on a flat surface to prevent back and knee problems. The positive side of lifting kettlebells outside is that it won't make any harm if the kettlebell drops. (Tsatsouline 2006, 20.)

Whether you are working inside or outside, you should use comfortable clothes that will not inhibit the range of motion and that are not too cold or hot to wear. So, either loose clothes or tights.

2.4 Training load & Volume

“Load refers to the amount of weight assigned to an exercise set.” (Bird, Tarpinning & Marino 2005, 844.) Build up the training load gradually using common sense, and listen to your body. “Training volume is prescribed in terms of the number of repetitions per set, number of sets per session, and the number of sessions per week.” (Bird et al. 2005, 844.) Remember that you have to build the total amount of exercise little by little. If you are unsure, it's better to do a little less than to do a little more. In kettlebell lifting, the flexibility plays a major role. So, training load refers also to the flexibility requirements. Don't force yourself into positions you are not ready for; remember to develop your flexibility gradually. The first times you are lifting with the kettlebells, even though the load is light to moderate, you are most likely to experience delayed onset muscle soreness (DOMS). This is because kettlebells are working the muscles in such a versatile way.

2.5 Breathing

“Breath control is critical for increasing and maintaining the structural integrity of the spine while under heavy loads.” (Everett 2008, 30.) Learn to breathe properly through diaphragm: inhale and the diaphragm expands and fills up with the air, exhale and it flattens. This is the way you get more air into your body and it is the natural way of breathing. By filling the lungs

with air the abdomen is forced to expand. At this point the surrounding musculature is activated and the internal pressure can be increased. “If the abdominals are drawn in, the base of support is reduced in width, and this is obviously not beneficial.” (Everett 2008, 30.) Draw in air and settle into the pressurization before any movement begins. It should be maintained throughout as much of the movement as possible. However, if you start feeling dizzy, you can release a small amount of air during the highest pressure moment of the lift through a hissing or similar action. However, releasing too much air will decrease the structural integrity of the torso.

3 Learning and teaching the lifts

All the coaches and players should demand excellent technique of all the lifts. There is a saying that “practise makes perfect” but that is not true, perfect practise makes perfect. Practising in a wrong way can even impair the performance.

Not only is poor execution of a movement ineffective for developing technique, it is counterproductive in the sense that it demands time and energy that could be put to better use, as well as create similar but incorrect motor patterns with which the correct patterns must compete.” (Everett 2008, 17.)

In Martin Rooney’s lecture, he quoted Bruce Lee saing: “I would rather practise one kick 1000 times than 1000 kicks at one time”. Master the skill. It is not about the exercise, it is how you do it. Attention to details separates great players/coaches from good players/coaches.

3.1 Weaknesses

No matter how good athlete you are, you are going to have weak link(s) in your body that needs to be consistently confronted, re-evaluated, and trained. Weak link does not mean only a muscle weakness. It can be used to identify any physical limitations, such as lack of flexibility, coordination, or movement patterns. Weak link is the area in which your training should concentrate on until it no more exists as the weak link. When athletes are starting their conditioning program they want to improve most of the athletic qualities at the same time, which is great. However, with this kind of program, athletes are not able to concentrate on a particular quality enough and probably the gap between weaknesses and strengths will not decrease at all. It is best to focus on single component that needs improvement. Great athletes will spend more time working on weakness than showing off strength. (Cook 2003, 7-10; Rooney 2009.)

3.2 Weight distribution

We want to have the centre of mass aligned vertically over the base of support. The base of support is the foundation that you are standing on. If the centre of mass is over the base of support, the weight becomes heavier and you will loose your balance and will not have stability. (Arvonen & Kailajärvi 2002, 42.)

The base of support will change according to your position. If you are standing with two feet, the base of support is the area around and in between where the feet lie. If you are sitting on the ground, your hip becomes the base of support. If you are standing on your head, the head becomes the base of support etc. (Cotter 2007.)

3.3 Lifting in front of the mirror

Lifting in front of the mirror is not recommended. Mirrors cause you to focus on the external stimulus. They cause you to focus on what you see, away from your body. Your focus should be on the internal mechanism. Instead of focusing on what you see, you should pay attention on how you feel. If you are focusing on how the muscle looks, you are not going to pay attention to the quality of the skill. By doing the exercises and feeling how your body is responding, you are going to learn much faster how to do this effectively. (Cotter 2007.)

3.4 Tension and relaxation

In order to execute a lift properly, you need to be aware of proper use of tension and relaxation. An always-tight bodybuilder has most likely problems in flexibility, whereas an always-loose yoga practitioner is probably weak. A balance between tension and relaxation needs to be found in order to lift kettlebells properly and effectively as well as to proper athletic skill training. So, in order to be well rounded, you need to alternate between being tense and being relaxed. Think about Michael Jordan or any other star player playing. Their style looks so fluent because they are able to use tension and relaxation at the right time to perform a particular skill. This is one reason why they are getting the utmost of their performance.

4 Injury prevention

Basketball is a high impact sport in which the injuries become more common. Almost every athlete will go through an injury in their athletic career. The best thing is to avoid injuries by appropriate training. For most of the athletes this is obvious, but only a small percentage is willing to take any actions considering it. However, if you get injured, ask yourself what caused it, where the pain is coming from, and what can be done to prevent the problem in the future. Be smart. (Cook 2003, 17-21.)

4.1 Eccentric & Isometric strength

Kettlebell is a great tool not only for force production, but for force reduction development. Force production is the ability to generate force for movement. It is known as a concentric force. The muscle work is dynamic and as the muscle contracts, it shortens. Force reduction is known as eccentric force. It is the ability to slow down the body when you are dealing with high degree of forces. For example, running full speed and stopping effectively so that an athlete can quickly change direction, take a jump shot, or make a pass. The muscle work is dynamic and as the muscle contracts, it lengthens. (Cotter 2007; Verstegen & Williams 2004, 255-256.)

Human body is able to produce most force in eccentric type of muscle work (Häkkinen 1990, 108). Static force is known as isometric force. In isometric muscle work the length of the muscle doesn't change because there is no movement. (Arvonen & Kailajärvi 2002, 68; Verstegen 2004, 256-257.) Isometric force should be trained in various angles of the joint so that the strength is balanced throughout the joint's range of motion. If an athlete has a particular weak angle comparing to the other angles of the joint, it should be trained and concentrated more until the imbalance has diminished. (Häkkinen 1990, 104-105.) Game stance is a good example that should be concentrated among basketball players. In game stance the knees are flexed, shoulders retracted, back straight, and the weight is more on the balls of the feet. This position enables you to react and take off quickly. Isometric force works hand in hand with the eccentric force and is involved with the deceleration and stopping mechanics.

Eccentric strength and isometric strength are vital for improved performance and injury prevention. Athletes and coaches should be most concerned with improving landing and

stopping ability before ever worrying about sprint speed and jumping height. Athletes should not progress to higher levels of difficulty until they have mastered lower level skill sets.

“Deceleration is a skill that must be learned and therefore all the neuromuscular imbalances can be modified. This is proven to lead to less incidence of injury.” (Rooney 2009.) Imagine if we are making athletes more explosive but they don’t know how to land or stop properly, this is a dangerous combination. Would you like to step into the car that goes 200 km/h but does not have breaks? On the court athlete’s body is like a car. If the athlete has strong muscles and the ability to move fast but does not have good brakes, he will not be able to perform his best.

If the production of eccentric and isometric force is poor, ground reaction forces are absorbed by the ligaments instead of the muscles. “Lack of muscular control leads to increased Knee Valgus, for example, poor hip and thigh muscular activation leads to Valgus position. During this type of deceleration knee ligament injury can occur.” (Rooney 2009.)

4.2 Body awareness

Kettlebell training requires body awareness. The training sessions improve motor learning, coordination, and movement patterns. You are able to feel what is going on in your body and perform the skills properly. If an athlete has a poor body awareness, he will most likely to compensate or use awkward or unnatural movement for a certain exercise. These movements can create more problems. By compensating, the athlete will have more stress on the other body parts. Usually new problems arise when body parts must work in abnormal situations. (Cook 2003, 18, 20;Cotter 2007.)

4.3 Muscle imbalances & Weak links

Muscle imbalances are a common reason for injury. As I mentioned earlier, kettlebell training focuses on working both sides separately, and this forces them to work the equal amount. You will get immediate feedback after lifting, if the other side is weaker. (Arvonen & Kailajärvi, 18-19; Cotter 2007.)

Kettlebell training identifies and strengthens any possible weak links in your body. By constantly working and strengthening on those weak links, will take you closer to your optimal performance. (Cook 2003, 10; Cotter 2007.)

4.4 Stability & Flexibility

Stability can be described as the ability to control force or movement. Stabilizing muscles are often referred to as postural muscles because they maintain body posture or joint position during activity. Kettlebell is designed in a way that requires activating and strengthening the stabilizing muscles in all the lifts.

Kettlebell lifts are using the full range of motion. Without a proper flexibility, your body has to compensate to perform a particular movement. This creates unwanted stress on the other body parts as other areas work harder to achieve the same level of performance. (Arvonen & Kailajärvi 2002, 18; Tsatsouline 2006, 156.)

Weak and tight muscles can lead to poor joint alignment, and when joints are not aligned they are not supportive or efficient and do not communicate effectively (Arvonen & Kailajärvi 2002, 18, 35).

At the end of the project, there is a separate chapter of joint health and flexibility that will go through some great exercises for developing flexibility.

5 Empirical part

5.1 Project planning

Kettlebell lifting is used among athletes of different sports. I have followed some of the sports how they use kettlebells for their training. Most of them will follow the basic lifts but in every sport they had their own particular exercises that develop the athletic requirements necessary for their own sport. That was the time when the idea of making this video came to my mind. I wanted to make an own teaching video that is suitable especially for basketball players.

There are hundreds of different kind of kettlebell lifts available and those lifts can be invented by anyone to make them suitable for their own needs. This is where the planning of the project started; choosing and inventing the appropriate lifts for the sport of basketball.

I figured out and thought over which of the lifts mimic and could be helpful for the basketball skills. I wanted to incorporate most of the basic lifts in the video and add the variations of them. I also wanted to categorize different athletic qualities (balance, joint health and flexibility, hand-eye coordination, and explosive power) and explain which lifts are appropriate for each of them.

After I was aware of most of the lifts, I started to search information concerning basketball, physical training, and kettlebells. I purchased and borrowed a lot of literature and some videos.

After that I had to figure out how to make the video. I would have to find an appropriate place and somebody to film the video. Next thing to consider was the format of the video; in which order I would present the material so that it would be the most logical and reasonable.

5.2 Project implementation

The video starts with the written part. It includes information about safety procedures, learning and teaching the lifts, and injury prevention. Each of the chapters is divided in subcategories.

Safety procedures includes information concerning footwear, hands, training environment and clothing, training load, and breathing. The objective of this chapter is to provide athletes and coaches with the safety procedures before they start any kind of lifting. The main concern should be about athletes not getting injured.

Learning and teaching the lifts includes information about weaknesses, weight distribution, lifting in front of the mirror, and tension and relaxation. In order to facilitate the learning process, athletes and coaches need to know the basics about these areas.

Injury prevention is divided into four subcategories concerning eccentric and isometric strength, body awareness, muscle imbalances and weak links, and stability and flexibility. In this chapter I explain all the qualities that kettlebell lifting will develop. These qualities are essential for injury prevention.

After the written part comes the “Introduction” and the next one is “Exercises”. Both of these parts are videotaped. In the part of “Exercises”, I will go through lifts and their variations of the swing, Turkish get-up, snatch, clean, overhead lifts, leg training, and abdominals and torso. I have also shown and explained what type of lifts are appropriate for balance, joint health and flexibility, hand-eye coordination, and explosive power training.

I have an athlete to demonstrate most of the lifts presented. Before the lifts I will go through some of the main points concerning the particular lift and after that I will explain the right technique points at the same time while the athlete is performing the lift. The lift is shown from the two different angles, from the front and side-view. At the end there will be a written summation of the key points of the lift.

5.3 Project assessment

I was pretty pleased for the outcome of my video. I was left with the feeling that I was able to cover most of the information that I wanted to bring forward in this video. I wanted to present the material in the most logical and orderly fashion possible to facilitate the learning process, and make a video that will provide players and coaches with the beneficial lifts for the game of basketball. I also wanted that players from all the levels, are able to get really demanding exercises. In my opinion, I succeeded in this.

The main concern of this project was my injuries. I went through four different kind of injuries one after another, so I had to postpone the filming process several times. My idea was to perform the lifts by myself and explain the technique points as well. Finally, when I was able to start the filming process and managed to perform couple of exercises, my back got injured. I had to come up with a new project plan and came to a conclusion that I would need an assistant. I am happy with this option as well because this way of showing the exercises enables me to teach and explain the technique points of each lift at a great degree. Only downside of this is that I had to take off couple of exercises because my assistant was not able to perform these lifts.

The other concern was the place where to film the project. I had to give up my first choice due to the reason of sound system. After all, the place where we managed to film this project was not the best option but adequate to satisfy the needs.

I also had problems from time to time to draw a line where to stop adding new lifts into the video. There are hundreds of lifts available and it was quite demanding to keep the video pithy.

6 Introduction & instructions of the exercises

6.1 Swing

This is the foundation of not only the core lifts but of all the kettlebell lifts that will follow. Steve Maxwell, a Brazilian Jiu-jitsu world champion states that doing the perfect kettlebell swing alone is superior to 99 percent of the sophisticated strength and conditioning programs out there.

Swing is a movement of a kettlebell from between your legs up to your chest level. It teaches how to generate force or power from the ground up. It also teaches how to connect the whole body as a one unit. In basketball the movement mimics a vertical jump and develops a game stance. When you bring the kettlebell down, it loads up important muscles of the rear which are called the posterior chain; the butt, hamstrings, and back. All these muscles are very important for generating power. You can activate the posterior chain even more by bringing the kettlebell way back between your legs, especially in one hand swing.

6.1.1 Mechanics of the swing

1. Your feet should be approximately hip width or shoulder width
 - a. Find a comfortable distance so that you feel stable and at the same time flexible and mobile.
2. Inhale when you lower yourself down and grab the kettlebell, exhale when you lift it up (this rule should be followed in all the lifts when you pick up the kettlebell).
3. Your weight is held on the front part of the heel, not on the toes
 - a. If the weight is on the toes, you are going to lose your balance by leaning too much forward.
4. Extend the hips and knees fully on the top of the swing/movement. The body must form a straight line.
 - a. Squeeze the butt as tight as you can and the hips will automatically extend forward. This will protect the spine. In the back swing, the hips are hinging back; hips fall

- b. Knees stay vertically over the feet; don't push them too much forward over the toes in order to avoid the loss of balance and too much stress on the knee joints.
- 5. Keep your abdomen very tight
 - a. If you don't hold it tight, there is going to be instability and too much movement in the midsection. This is the most common reason for lower back injuries in lifting. (Cotter 2007.)
 - b. A good way to make sure it is tight and at the same time activate the deep muscles of the core is to pull your belly button in
- 6. When the kettlebell is in the front, at the top of the swing, exhale. When it comes down, inhale and pull your shoulders back.
 - a. Breathing should produce an audible voice. This is the way you make sure you get more air into your working muscles, and lengthen the symptoms of fatigue
- 7. Your arms stay straight and loose
- 8. Keep the wrists aligned with the straight arms
 - a. If they are bent and you cannot keep them straight, they are your weak link in the kinetic chain
- 9. One arm kettlebell swing follows the same mechanical guidelines
 - a. Free arm works as a counterbalance
 - b. Bring the kettlebell way back in order to activate more the posterior chain

6.2 Turkish get-up

This is the foundation for all the overhead lifts (Cotter 2007). This is a tremendous exercise for developing stability and flexibility not only in the upper body, but in the lower body as well. This is a great exercise to learn to use your body as a one cohesive unit. I am going to present four different variations of Turkish get-up.

6.2.1 Mechanics of the Turkish get-up

1. When you pick up the kettlebell, make sure that your arm is not rotated externally. This is a very dangerous and vulnerable position for shoulder (Cotter 2007)
 - a. Use two hands to lift the kettlebell from the ground at the start of the exercise and to return it to the ground at the end.
2. After you have pressed the kettlebell up, keep the wrist straight; do not let it hyperextend and stress the wrist
3. Lock out your elbow and keep it locked throughout the movement
4. Keep your arm vertically aligned over your shoulder; do not let it go to the sides
5. All the time look at the kettlebell. This way it is easier to control and the risk of getting injured is smaller. As an example, if you are not able to hold the kettlebell and it falls, you are able to react quickly and you know exactly where it is going to fall.

6.3 Snatch

Snatch is very similar to the movement of the swing, except the kettlebell is brought to the overhead position at the top of the lift. Snatch is a great exercise for developing the back, hip, shoulder, and grip strength. It is also an excellent exercise for developing cardio-respiratory endurance. When high repetitions are used in kettlebell snatches, it not only builds strength and endurance, but willpower and pain tolerance. This exercise requires a good technique and concentration. It is a well known fact that it is most difficult to concentrate when we are extremely exhausted. In a basketball game, you might be in this same situation at the end of the game. The game is tight and if you lose your concentration just for a second, you are more likely to make a mistake which can change the whole game.

You can start the snatch from two different positions. The first position is when the kettlebell is on the floor and this is called the “dead position”. Dead-snatch you start from the stop position and return to that same stop position. The second position is called the “hang position”. In hang-snatch you are doing continuous movement by not bringing the kettlebell all the way down.

Dead-snatch is more beneficial for developing fast and explosive movements. In the starting position your hips are already in “ready to go” position. You do not have a back swing to initiate the lift, so you have to develop a lot of power from your legs and hips. In other words, if you want to jump higher, run faster, or just to be more explosive, you want to concentrate more on this technique, whereas hang-snatch is more beneficial style for developing cardiovascular conditioning with high repetitions. (Cotter 2007.)

6.3.1 Mechanics of the snatch

1. Pick up the kettlebell, swing it back between your legs, and snatch it into the overhead position in a single movement
 - a. The snatch is powered by the hips
2. Do not let the kettlebell bang your forearm.
 - a. You should use the same kind of technique as in clean to move your hand inside of the kettlebell
 - b. Open your hand and slip it in early in the upright momentum of the kettlebell
3. While in the overhead position, remember to lock your elbow. This time the arm must be level with the head or behind the head. The kettlebell must be centered directly over the base of support. A vertical line drawn to the floor from the kettlebell should pass through the foot just in front of the heel. Legs are straight and the knees are locked.
 - a. Hold this position just for a second to make sure you are balanced and the lift is under your control
4. Lower the kettlebell between your legs in one loose, controlled motion, without touching the chest or the shoulder

6.4 Clean

Clean done with the kettlebell differs quite much from the clean done with the barbell. Some of the differences are not using the hook grip (wrapping the bar with thumb and placing index and middle fingers over the thumb), keeping the elbows in, and not shrugging the shoulders when the kettlebell is in rack position. You can start the clean from two different positions,

just like the snatch, from the “dead position” and “hang position”. Before you start lifting double hang- or dead-cleans, you should get comfortable with two kettlebells in the rack-position.

6.4.1 Mechanics of the clean

1. Everything from the beginning is identical to the swing
 - a. The weight is on the front part of the heels and when you are generating power, fully extend the joints
 - i. lock the knees, squeeze the butt and abdominals
2. When you pull the kettlebell, it is very important that you maintain the vertical alignment (explained in the next mechanical guideline).
 - a. You do not want to let your arm to come out to the side because that time it is isolated and moving independently from your body
 - b. If you have a heavy enough weight, arm moving to the side can cause a severe injury to your shoulder
3. At the top of the clean, the kettlebell is held in a rack position
 - a. It rests against your body
 - b. The kettlebell lies deep down in the base of the palm, not in the centre of the hand when the wrist is uncomfortable bent
 - c. If the position is correctly in your hand, you do not even need to close it. You can have your fingers relaxed and the kettlebell will stay stable
 - d. Thumb should touch or come close to your chest
 - e. The alignment of the forearm is vertical
 - f. The alignment of the kettlebell is vertically aligned from the palm over the elbow, hip, knee, and the outside of the foot
 - g. This is also a perfect position to any overhead movement or lift
4. Do not let the kettlebell hit your arm too hard
 - a. This is the most common problem among new lifters. We want to develop a smoother technique

- b. The kettlebell must travel the shortest distance possible. Instead of letting the kettlebell rotate around your hand and slam at your forearm, you want to learn to move your hand inside of the kettlebell
 - i. the way you accomplish this is by doing a smaller clean, opening your hand and slipping it in

6.5 Overhead lifts

Overhead lifts (OHL) develop all the pushing muscles of the body: triceps, deltoids, trapezius, ribcage, latissimus dorsi, and back. It also involves tension throughout the body, so the lower body, abdominals, and forearms are also working. The benefit of the OHL is that it develops a tremendous stability as well as flexibility in the shoulders. (Cotter 2007.) This is very important for basketball players, for example when shooting the ball. You need to have a good flexibility in order to get the technique and range of motion right.

6.5.1 Mechanics of the overhead lifts

1. Overhead lock out position is the same in pressing, in the top of the snatch, and in any other movement that is overhead
2. When the kettlebell is overhead, it lies in the base of the palm and it is directly aligned over the joints: the kettlebell directly over your elbow, shoulder, hip, outside of the knee, and outside of the foot
 - a. If the kettlebell is in front of your body or on the side, it puts too much stress on the shoulder joint, and you are not able to hold heavy weights
3. Before you start lifting the kettlebell, create tension by inhaling and holding the breath throughout the most difficult part of the lift
 - a. Do not hold the breath more than couple of seconds. If you feel dizziness, you might want to let the air come out a little bit by audible voice
4. Keep your eyes all the time on the kettlebell
 - a. Pavel Tsatsouline states in his book, “Enter the kettlebell”, that instead of looking at the kettlebell, you should look straight ahead in order to avoid a back lean. However, the back lean is unsubstantial and by looking at the

kettlebell, you pay attention to the possibility that it is falling, and this way you secure yourself. With double lifts the back lean is greater and that time you can look straight ahead to avoid it

5. As you lower the kettlebell, absorb the shock with your knees by dipping them

6.6 Leg training

In leg training, I want to point out the importance of developing the single-leg strength. This is a quality that is often ignored in strength programs but is essential to the improvement of speed, balance, change of direction, and the prevention of injury. Ask yourself a simple question. Is basketball played with both feet in the contact with the ground at the same time? The answer is no, and that is why single-leg strength should be emphasized. “Single-leg strength is specific and cannot be developed through double-leg exercises. The actions of the pelvic stabilizers are different in a single-leg stance than in double-leg stance.” (Boyle, 124, Designing strength training programs and facilities.)

In single-leg training we are able to notice any possible side differences.

If the other side is dominant, there will be difference in strength and motor skill between right and left limbs. This dominance can leave the weaker and less skilled limb at risk and the stronger limb at risk for dependence during increased loading and high force situations. (Rooney 2009.)

In the double-leg exercises, front squat is used instead of back squat because it is safer. It provides excellent strength development with a decreased incidence of injury. Front squat keeps the torso upright and decreases the torque that causes problems with the SI joint (sacroiliac joint). So, the front squat produces a better body position by the nature of the exercise.

Muscles that extend the hip, primarily the gluteus maximus and hamstring group, are often neglected in many training programs. Hip-dominant exercises are at least as important as knee-dominant exercises.

6.6.1 Squat

Squat is a full range of motion exercise and very valuable tool for building strength and power. “A correct squat perfectly balances all the forces around the knees and the hips, using these muscles in exactly the way the skeletal biomechanics are designed for them to be used, over their anatomically full range of motion.” (Rippetoe 2007, 8.) Squat has a reputation of being a quadriceps exercise, but it also develops hamstrings when done with the full range of motion.

Squat reveals important information about strength, flexibility, and injury potential. Squatting with light kettlebell(s) can be used to assess flexibility in the hips, ankles, and hamstrings and the general strength of the lower body (Boyle 2004, 53-54).

Proper depth in squat is a full depth, which can be either squatting to the lowest position possible when the hips should drop below level with the top of patella, or the parallel relationship of the femur to the floor. If the squat is not deep, it is called the partial squat. Partial squats stress the knees and the quadriceps without stressing the gluteus muscles, the adductors, and the hamstrings. In addition, partial squats present a larger risk of back injury due to the heavier weights used in partial movements. The deeper you are able to squat with a good form, the more the hamstrings are stretched, and the longer they are when they begin to contract the longer they will produce force during the contraction. Athletes with normal flexibility can squat to a position with the thighs parallel to the floor with no heel elevation. Athletes who cannot perform a full depth squat are deficient in either ankle, hip, adductor, or hamstring flexibility. Less flexible athletes can use heel elevation by putting for example a small board or a specially made wedge under the heels. At this point, they should be able to perform a full depth squat. “The idea that elevating the heels increases the stress on the knees is not supported by any scientific research.” (Boyle 2004, 53.)

Stance is highly individual issue and will vary with hip width, hip ligament tightness, femur and tibia length and proportion, adductor and hamstring flexibility, knee joint alignment, and ankle flexibility. Everybody’s stance will be slightly different. However, the recommended stance is that the starting foot placement will be approximately hip-width at the heels with the toes pointed out slightly, about 30 degrees. Knees are shoved out to where they are in a parallel line with the feet, which will allow for easier depth and it adds the adductors to the movement. Knees are directly above or just a little in front of your toes.

Maintenance of the lumbar spine's lordotic arch is very important. The joints of the lumbar vertebrae and the sacrum are the most susceptible to injury. So, maintain as upright torso as possible.

The head should remain upright and the eyes should remain directed straight ahead. Some lifters will locate a centred point on which to focus, but it is important that the point will be enough far away so that the lifter will not have to change the position of his head when squatting up and down. When using a centred point, a good rule is to look down at a spot on the floor about two metres in front of your position. You should not look up because this places your cervical spine in extreme hyperextension.

Chest should be lifted up. This is important in order to get the upper back into "normal anatomical position", the position in which the spine is safe while bearing a load. Some coaches have used tennis balls by placing them under lifters' chin for the purpose of illustrating a chin-down chest-up position.

Hold the kettlebell(s) in a rack position. The alignment of the kettlebell is vertically aligned from the palm over the elbow, hip, knee, and the outside of the foot.

As you come up from the bottom position, drive your butt straight up in the air, not forward. This keeps your weight solidly on the whole foot instead of shifting to the toes.

At the top of the movement, extend the knees, hips, and back. Do not hyperextend, otherwise it will put unwanted stress on your vertebral discs.

6.6.2 Lunge

Different kind of lunges are great simple exercises for developing single-leg strength. The key benefit of the lunge is that the leg muscles must cause deceleration as the body moves forward. So, this means you are working with both, eccentric and concentric force. As I mentioned earlier, eccentric force is very essential for basketball players. Lunges are also an excellent dynamic stretching movement for the hip area.

There are three different ways to hold the kettlebell; in a rack position, from the horns with two hands in which arms are more involved, or in an overhead position which works more the stabilizing muscles of the shoulder. When performing the lunges with two kettlebells, you are

able to use two of these techniques, the rack and overhead position. With one kettlebell, when using the rack position or overhead position, you are able to work ipsi-(same side leg and arm) and contra-laterally (opposite leg and arm). When using overhead position, remember to keep the kettlebell vertically aligned.

6.6.2.1 Mechanics of the lunge

1. Make sure your knees will not exceed your toes. Keep the front knee over the ankle and concentrate on dropping the back knee down to the floor.
 - a. The knee of the back should be slightly flexed. Done correctly, it feels like you are doing a slight hip flexor stretch
2. Your foot should be pointing forward, the same direction as the knee is going
3. Keep your back straight throughout the movement
4. Keep the head and chest up
5. As you come up, explosively push yourself into the starting position

6.7 Abdominals & Torso

Athletes have a tendency to think that the movement begins from the limbs. If we reach out to grab something or step forward, it is natural to think that legs or arms initiate the movement. “Movement, however, starts from the very center of the body, the core area of the torso.” (Verstegen & Williams 2004, 27.) Torso strength is the foundation of movement and it consists of core, hip, and shoulder stability. Torso is the link between upper-body strength and lower-body strength. “It is impossible to move the limbs efficiently and with force if they are not attached to something solid and stable. The better you can transfer energy through your body, the more efficiently you will move.” (Verstegen & Williams 2004, 27-28.) These exercises help to develop a more stable platform from which to change direction, take a jump shot, or control the body in different positions. Torso training is one of the keys to injury prevention and improved sport performance.

If you lack torso strength, specifically hip stability, the energy “leaks out” at the hip, and the body must compensate. More pressure is placed down toward the knees and up toward the lower back, which over time can cause degenerative problems.” (Verstegen & Williams 2004, 28.)

Many of the basketball players are working the abs at the wrong way. They might do hundreds of repetitions a day and wonder why they still don't have enough strength in their abdominals. Abdominals are just like any other muscle in your body. Imagine doing bicep curls hundreds of repetitions at the same working session. Obviously this forces you to train with fairly light weight in order to finish all the repetitions, which will not be the best option for strength development. The aim is to incorporate as many muscle fibres, and in order to do that the repetitions should be much lower, approximately from 5 to 20. However, I will not say it is wrong to train also for higher repetitions. Actually it is good to have a program that concentrates on both, muscle endurance and maximal strength. Another drawback of athletes' torso training is that they usually concentrate on flexion and extension exercises for the rectus abdominis muscles such as crunches and sit-ups. If we think about basketball, how much it involves flexion and extension of the trunk? The answer is very little. Basketball is about stabilization and rotation. A great way to train torso is in a sport specific position, which is standing, but it needs to be trained also in various positions on the ground.

Weak abdominals overload the low back muscles which will impair their elasticity and ability to relax. Weak abdominals are not able to give appropriate support when lifting heavy loads from the ground. This will most likely put unwanted stress on the back and cause an injury. Also, landing after each jump requires good abdominal strength to keep the core aligned, absorb the shock and alleviate the stress on the back. (Arvonen & Kailajärvi 2002, 22.)

Torso training can be divided in four categories; stabilization, rotation, lateral flexion, and flexion. In the section of abdominals & torso exercises, I will go through the exercises that will cover all these categories but mainly concentrate on stabilization and rotation exercises.

6.8 Balance

This is very essential area especially in basketball. How well are athletes able to control their body while moving on the court or finishing the shot, lay-up, or pass in the air, separates the good and excellent players. “Balance is a key factor in elite training programs. Strength, flexibility, speed, and stamina must be balanced. Without balance efficiency is sacrificed.

When efficiency is lost, so is power.” (Cook 2003, 9.) When we think about Michael Jordan playing, everything he did on the court looked so easy and smooth. In a real life those moves and the way he played requires a lot of balance and control of your body.

In all the balancing exercises, deep and supporting (stabilizing) muscles are getting a tremendous workout. Deep muscles are those that support the midsection. So, there is a link between torso training and balance.

The sense of proprioception is a key component of stability and is vital to everyday life. On the court you might be knocked off balance and land by turning an ankle or tearing a knee. However, with the improved sense of proprioception you may not only prevent injury, you also may be in a better position to react to what’s happening in the game. (Verstegen & Williams 2004, 74-75.)

All the following balance exercises are good to be done as a warm up. This is a good way to open up the range of motions and to activate all the muscles needed for upcoming lifts. These lifts can be done with smaller weights because gaining strength is not the purpose of this section.

6.9 Joint health and flexibility

Flexibility is sport specific. You would not expect a linebacker in American football to have the same flexibility as an Olympic gymnast, because it is not required for his sport. Basketball players need to have a good overall flexibility in order to reach their maximum potential.

Flexibility is very essential and it will have an affect on performance. Speed strength requires a rapid contraction of the muscles. If the muscle fibres are “stuck” or they have lost their elasticity, this will show as impaired performance. Muscles that are tight will work also at a slower level. Good flexibility and range of motion will improve the elasticity of the muscles, relax muscles, fastens the recovery, improves the posture and body awarness, decrease the muscle soreness, improve muscle control, decrease the risk of getting injured, and increase the balance of the body and mind. (Arvonen & Kailajärvi 2002, 35-37.)

The exercises of the joint health and flexibility are also great to involve into your warm up. They prepare your body for heavier lifts and are healthy to do on daily basis just to keep good

joint health and flexibility. Shoulders are very essential for basketball players. So, as you warm them up with these exercises, you are at the same time working on your flexibility and you also save time.

Tight as well as weak muscles are more likely to impair the control and the posture of the body because the function of the muscles and ligaments to keep the body's upright position is distorted. This can lead to degenerated problems and ache. Usually the tightest muscles are hip and knee extensors, and pectoralis muscles. These are the muscles that have an effect on posture.

6.10 Hand-eye coordination

Hand-eye coordination means the total amount of coordination a person has between their eyes and their hands. Being able to catch different kind of passes is a good example of this skill.

6.11 Explosive power

All of the exercises in this section are based on powerful movements. Power is the ability to move the load as rapidly as possible. In this section we are going to work on very dynamic, explosive and athletic movements that are going to take your strength and conditioning to much higher level and is going to improve your level to perform at a higher level. (Cotter 2007.) In explosive power training for the lower extremities, I emphasise to teach jumping skills and to develop landing with great stability. We must learn to jump off the ground and properly land on the ground before we attempt to minimize time spent on the ground.

Athletes should be taught to land softly. The more softly the athlete lands, the better. Athletes must learn to absorb force with the muscles, not with the joints. This is the way of developing eccentric strength which is very important phase of plyometric training. The key is to develop eccentric strength and stability which will decrease the risk of getting injured. Drills for explosive power are broken down into linear and lateral drills.

Through the exercises of the explosive power is a great way to develop power without necessarily developing large amounts of muscle. The emphasis is on the nervous system, not on the muscular system.

7 Exercises

I have chosen these exercises because of their benefits to basketball players to help them perform better on the court. I will go through all the basic lifts and techniques following the more demanding, advanced lifts. So, athletes from all the levels are able to find suitable and enough demanding lifts for them.

7.1 Swing

1. Double swing
 - a. A basic swing using two kettlebells, one in each hand
 - b. Take a nice wide stance so that the kettlebells have enough space to travel between your legs without hitting them
 - c. If this is the first time you do it, you can get comfortable just by doing mini-swings
 - i. Move up and down by bending the hip and knees. The arms stay relaxed. This movement moves the kettlebells in a shorter range of motion compared to basic swing
 - d. When you are using two kettlebells at a time, one in each hand, it will make the lift much more demanding. You are working more with the coordination and balance. Both arms and sides of your body are getting the equal amount of stress.
2. 2 handed swing with the side step
 - a. Step to the side and perform a back swing. Explode with the pushing leg (the leg you stepped to the side) in order to get back to the starting position.
 - b. Perform first one side at a time for a certain amount of repetitions. As you progress, you can alternate the sides one after another.
 - c. To add an athletic component, keep one leg off the ground as you get up
 - d. This exercise develops and mimics the first step speed and defense
3. Double swing with the side step
 - a. This is exactly the same exercise as the “2 handed swing with the side step”, except this one you will do with two kettlebells

4. Crescent swing
 - a. Swing the kettlebell above your head, open the hip and step back or forward by turning 180°. When the kettlebell comes down, you have to absorb the force with your stance.
 - b. This exercise mimics and develops the movements of getting open in both directions without the ball, and the spin movement with the ball

5. Double crescent swing
 - a. This is exactly the same exercise as the “Crescent swing”, except this one you will do with two kettlebells

6. Multi-direction swing
 - a. Combine all the variations of the walking swings (forward, backward, defence) and the crescent swing
 - b. This is a great exercise to do with a partner
 - i. Partner will yell or point out the direction and you will respond to that
 - ii. It is a great way of training reflexes knowing how to respond to someone’s direction. As a defender, you have to react all the time where the offensive player is going or what is he/she doing
 - iii. It is very important to practice moving on all the directions in order to move effectively on the court too
 - iv. However, make sure that you are working approximately the same amount on each direction in order to avoid side differences. In this case a certain amount of repetitions on each direction is a good option

7. Running swing
 - a. As you swing the kettlebell up, there is a free floating period of time when you are able to move with the quick steps. When the kettlebell comes down, you have to absorb the force with your stance
 - b. You can do this exercise by running forward or backward, or by using defense slides. With forward running you will stop with the stutter steps, just like in close out.
 - c. This exercise adds tremendous cardiovascular conditioning component as well as coordination component

7.2 Turkish get-up

1. 1st variation
 - a. Lie on your back and grab the kettlebell by helping with the other hand. Lift it up and lock your elbow. Make sure your wrist is straight, not hyperextended.
 - b. Bent the same side leg and use your “free” arm, palm and forearm to help you get into the sitting position
 - c. Lift the hip and move the extended leg back into a kneeling position in order to get into a lunge position. Stand up
 - d. As you stand up, keep the knee directly over the toes. If the knee is coming in or out, it creates unwanted pressure to your knee joint.
 - e. When you are coming down, reverse that movement

2. 2nd variation
 - a. Same as the beginning of the 1st variation, except do not lift the hip off the ground
 - b. As you are in the sitting position, switch the position of your legs: bend the extended leg and extend the bent leg
 - c. Use your rear arm to push yourself forward into a lunge position. Stand up
 - d. When you are coming down, reverse that movement

3. 3rd variation
 - a. Without using the “free” arm, make a normal sit-up in order to get into the sitting position
 - b. Switch the position of your legs: bend the extended leg and extend the bent leg
 - c. Get into the lunge position without using your “free” arm at all. Stand up
 - d. When you are coming down, reverse that movement

4. 4th variation
 - a. You have a kettlebell in each hand
 - b. If necessary, you can generate some momentum by kipping your feet a little bit and get up into the sitting position
 - c. Switch the position of your legs: bend the extended leg and extend the bent leg
 - d. Get into the lunge position and stand up
 - e. When you are coming down, reverse that movement

7.3 Snatch

1. 1 leg 1 arm snatch
 - a. Stand on one leg and have the kettlebell hanging in front of you with a straight arm, either on the same side or opposite arm
 - b. Bend your working leg and snatch the kettlebell into an overhead position. Hold it there for couple of seconds before lowering it back to the starting position

2. Double hang-snatch
 - a. This is exactly the same exercise as one arm hang-snatch, except this one is done with two kettlebells
 - b. Lift the kettlebells up and initiate the movement by swinging back and let the kettlebells come between your legs
 - c. When the kettlebells are in the overhead position, let them drop vertically
 - d. Snatch done with two kettlebells is more demanding than its counterpart with one hand because of the coordination component

3. Double dead-snatch
 - a. This exactly the same exercise as “Double hang-snatch” except this is done from the “dead position”
 - b. Extend your knees and hip explosively, and bring the kettlebells into the overhead position
 - c. After that, lower it all the way down to the ground under control

4. Alternating snatch (2 count)
 - a. Pick up two kettlebells. Snatch one kettlebell while the other stays still
 - b. After the kettlebell you snatched is back in the starting position, you start snatching the other one
 - c. This exercise involves the coordination component in a much higher degree than double snatch, and therefore is more demanding exercise

5. Alternating snatch (1 count)
 - a. This is exactly the same exercise as “Alternating snatch (2 count)” except this is done with one count. It means, when one kettlebell is coming down, at the same time the other is going up

- b. Once you get to the top of the movement, your body is dipping and you get ready to lift the other kettlebell
- c. Your mind can be only in one place, so think only pulling the kettlebell up, not bringing it down because otherwise your mind gets mixed up and you might lose the technique (Cotter 2007). The gravity is going to take care of the lowering aspect
- d. This style is even more explosive and dynamic, and requires more coordination than 2 count-style

7.4 Clean

1. Double hang-clean
 - a. Start by deadlifting the kettlebells up
 - b. Initiate the movement by swinging back and let the kettlebells come between your legs
 - c. When the kettlebells are in the rack position, let them drop vertically
 - d. In the rack position, sometimes your fingers might bang together. In order to avoid this, use the open grip (extend your fingers) or bring the fingers behind the handle
2. Double dead-clean
 - a. The same guidelines as in double hang-clean, except you start from the dead-position
 - b. Extend explosively your knees and hip, and bring the kettlebells into the rack position
 - c. Lower it all the way down to the ground under control
3. Alternating clean (2 count)
 - a. You have both kettlebells in a hang position, and you are going to clean one while the other stays still.
 - b. After the kettlebell you cleaned is back in the starting position, you start cleaning the other one
 - c. This exercise involves the coordination component in a much higher degree than double dead- and hang-clean, and therefore is more demanding exercise

4. Alternating clean (1 count)
 - a. This is exactly the same exercise as “Alternating clean (2 count)” except this is done with one count. It means, when one kettlebell is coming down, at the same time the other is going up
 - b. Once you get to the top of the movement, your body is dipping and you get ready to lift the other kettlebell
 - c. Your mind can be only in one place, so think only pulling the kettlebell up, not bringing it down because otherwise your mind gets mixed up and you might lose the technique. The gravity is going to take care of the lowering aspect
 - d. This style is even more explosive and dynamic, and requires more coordination than 2 count-style

7.5 Overhead lifts

1. 1 arm push press
 - a. This is a very explosive exercise in which you have to involve your legs as well
 - i. Use your legs first by dipping and then aggressively standing up. Very forcefully push your heels to the ground and extend your legs
 - b. On the top position, hold the kettlebells for couple of seconds (around 2 seconds)
 - c. Before you start lowering the kettlebell, breath in in order to protect the spine. On the way down, you should be able to lower the kettlebell under control
 - d. In order to create more force, you should produce an audible clap with your feet. Note that this clap should be a product of speed and viciousness, not of elevation
2. Double split jerk
 - a. This exercise follows the same guidelines as the “1 arm push press”. However it differs from the landing position, which is a split position, and this one is done with two kettlebells
 - b. The lead foot should be directed straight ahead or turned in very slightly. The rear foot will be turned in more in order to keep the foot in line with the leg.

- c. The depth of the feet should be adjusted until the shin of the lead leg is approximately vertical. The back knee must remain flexed – this relieves tension on the ankle and relieves hip flexor tension on the pelvis
- d. In this exercise it is better not to look at the kettlebells
 - i. This position easily arches the back and creates unwanted stress on the lumbar vertebrae
- e. This is a great exercise for first step speed

3. Sots press

- a. Clean the kettlebell, squat down and stay squatted with your feet flat. Press the kettlebell into the overhead position
 - i. Do not let your knees come in. This creates a lot of stress on the knee and ankle, so keep them pressed out (mechanics of the squat are explained more precisely in the leg training chapter)
- b. You can make the lift easier by rotating a little bit to the other side
- c. This is a very challenging variation of pressing and puts tremendous demands on your body. It requires a lot of flexibility and mobility of the shoulders, spine, and hips.
 - i. “Flexibility is the range of motion around a joint. Mobility is how well the joint moves.” (Boyle, 112, Designing strength training programs and facilities.)

4. Double sots press

- a. This is exactly the same exercise as “Sots press”, except this is done with two kettlebells
- b. This is one of the most challenging and difficult of all the kettlebell lifts. You have one kettlebell in each hand and you can not rotate to one side or another; you have to come straight up the centre

5. Alternating sots press (2 count)

- a. This is exactly the same exercise as “Double sots press”, except you lift one kettlebell up while the other one is in a rack position. After you have lowered the kettlebell next to the other one, you will alternate

6. Alternating sots press (1 count)
 - a. This is exactly the same exercise as “Double sots press (2 count)”, except when one kettlebell is coming down, at the same time one is going up

7. Double overhead walk with a complete turn
 - a. Press two kettlebells into an overhead position
 - b. Remember to keep the kettlebells vertically aligned
 - c. Start walking forward by turning 360 degrees, every time switching the turning direction
 - d. Repeat the same thing walking backwards back
 - e. This is an excellent exercise for developing the isometric strength and all the stabilizing muscles in the shoulders

7.6 Leg training

1. Double front squat
 - a. Clean kettlebells into the rack position
 - b. Squat down by using the technique points of the squat discussed previously

2. Overhead squat
 - a. Press the kettlebell up and keep it there throughout the movement. Remember to keep the kettlebell vertically aligned
 - b. The “free arm” works as a counterbalance
 - c. Squat down and up
 - d. If the flexibility is the issue, you can use a heavy kettlebell which is on the ground
 - i. If you cannot get low enough, use the kettlebell on the ground to pull yourself deeper
 - e. If the shoulder flexibility is the issue, just slightly turn your body towards the kettlebell and it will get easier

3. Double overhead squat
 - a. Exactly the same exercise as ”Overhead squat”, except this is done with two kettlebells
 - b. This exercise is much more demanding than 1 arm overhead squat

- i. You cannot rotate your body to one side or another; you have to come straight up the centre
4. Double overhead lunge forward & backward
 - a. This exercise is a combination of forward and backward lunge
 - b. The movement begins by standing with the feet together and kettlebells in overhead position. Step forward into a lunge position. After that, explosively push yourself straight into a backward lunge without touching the foot on the ground while passing the starting position. After this, push yourself back into a forward lunge without touching the foot on the ground while passing the starting position. Kettlebells stay overhead throughout the movement
 - c. Repeat this a certain amount of repetitions with one leg first and then switch to the other
 - d. This is more demanding compared to regular overhead forward lunge or backward lunge because of its greater balance requirements
5. 1 leg bench squat
 - a. Have two kettlebells with straight arms on the both side of your body
 - b. Lift the back foot on the top of a bench
 - i. The bench should not be too high, so that your back would not hyperextend while in the bottom position. A bench approximately to your knee level or lower is appropriate
 - c. When you start squatting down:
 - i. Keep the toes pointing forward and the knee will not exceed the toes. Try to keep the knee as stable as possible
 - ii. Keep the eyes looking forward
 - iii. Squat to the position where your thigh is parallel to the ground
 - d. This is a slight increase in difficulty compared to regular lunge because the back leg can provide very little assistance
6. Pistol squat
 - a. Hold the kettlebell from the horns, in front of the chest
 - b. Lift one leg up in the air and extend it
 - c. Squat down and come up
 - i. The leg in the front, will not touch the ground during the movement

- ii. Concentrate on keeping the weight on the heel to minimize movement at the ankle and to keep the knee from moving over the toes at the bottom position. For the athletes who struggle with this, a plate placed under their heel will be extremely helpful
 - d. If you have problems performing the pistol squat, do this same exercise by standing on a box
 - i. The extended leg can point more downward when the flexibility demands will decrease and make the movement easier
 - e. Pistol squats are the most difficult and most beneficial of all single-leg exercises. Unlike in lunge or bench squat, you are not able to receive the balance or stability from the opposite leg and this time the pelvic muscles must function as stabilizers. This is essential because pelvic muscle stabilization is needed in all sprinting actions. (Boyle 2004, 62-63.) This exercise requires a lot of flexibility and strength
7. Double pistol squat
- a. This is exactly the same exercise as the “Pistol squat”, except this is done with two kettlebells by holding them in a rack position
8. Overhead pistol squat
- a. Press one kettlebell into an overhead position and perform a pistol squat with the opposite leg
9. 1 arm 1 leg deadlift
- a. Stand on one leg throughout the movement and have the weight on front of the heel
 - b. Have the kettlebell on the opposite arm to the working leg. The arm is held straight
 - c. Concentrate on pushing the hips and butt back instead of leaning forward
 - d. Keep the back arched, pinch the working shoulder back, chest up, and keep the eyes looking forward
 - e. You can either bent your leg when lowering the kettlebell, or keep it straight.
 - i. If you bent the leg, this will target more on your gluteus muscles and quadriceps
 - ii. If you keep your leg straight, it will target more on the hamstrings

- iii. It is critical to use exercises from both categories to properly train the posterior chain muscles.
 - f. If you are performing a 1 arm 1 leg straight leg deadlift:
 - i. Lift the free leg to the rear in line with the torso
 - ii. Touch with the dumbbell on the ground outside the opposite foot
 - g. If you are performing a 1 arm 1 leg bent leg deadlift:
 - i. Do not lift the free leg to the rear in line with torso. Just keep it off the ground.
 - ii. Touch the kettlebell to the inside of the opposite foot
 - iii. The emphasis is more on sitting than leaning
 - h. I prefer this exercise over the double-leg version because it is more functional
 - i. It emphasizes a tremendous proprioceptive work at the ankle
 - ii. It enhances balance
 - iii. It is safe exercise because high loads are not necessary and the possibility of the back injury is almost nonexistent

10. Defense

- a. Hold the kettlebell in front of your chest from the handles
- b. Stay low throughout the exercise
- c. The partner will point out the direction in which you have to react
 - i. Always start the drill with the stutter steps while staying still
 - ii. Directions: up – jump, down – stutter steps, to the sides – defense slide
- d. Work for about 15-25 seconds
- e. It is a great way of training reflexes knowing how to respond to someone's direction

11. Defense & stutter steps

- a. Hold a kettlebell from the horns in front of your chest
- b. Start taking defensive slides and after couple of metres switch into small and fast stutter steps. Move like this approximately two metres and after that you will perform the same protocol
- c. Work on both sides
- d. Basketball is a sport of change of rhythm. Athletes need to be able to change the rhythm from slow to fast

12. Lava & two buckets of cold water
 - a. Hold a kettlebell from the horns in front of your chest
 - b. Imagine that there is lava in the middle and two buckets of cold water on the sides, so you want to spend as less time as possible in the middle
 - c. Keep your legs apart and squat down. As you come up, jump by bringing your legs together in the air
 - d. As you land in the middle, immediately throw your legs to the sides and repeat the movement

13. Linear deceleration mechanics with a step forward
 - a. Hold kettlebells in a rack position
 - b. Other leg in the front. Stay in this position for a while and move the other leg in the front while keeping the same height
 - c. Excellent for isometric strength

14. Linear deceleration mechanics with a jump
 - a. Exactly the same exercise as the “Linear deceleration mechanics with a step forward”, except this is done by switching the front leg in the air with a jump

15. Lateral deceleration mechanics with a body shift
 - a. Lean from side to side. Keep your upper body above one knee and the other leg is straight on the side.
 - b. Excellent for isometric strength

16. Lateral deceleration mechanics with a jump
 - a. Begin the exercise standing with one leg while a kettlebell is hold in front of your chest
 - b. Jump laterally and land with your other leg. Balance yourself and repeat the movement to the other side once you feel like you are under control

7.7 Abdominals & Torso

1. Seated Russian twist
 - a. Sit down, grab the kettlebell from the horns and hold it in front of your chest. Lift the legs up

- b. Touch the ground gently with the kettlebell and quickly change the side
 - i. Do not bounce the kettlebell off the ground because that eases the movement
 - c. This is a great exercise for rotational strength
2. Walking Russian twist
- a. Hold the kettlebell from the handles in front of you
 - b. As you start walking, swing the kettlebell to the same side as your front leg. The kettlebell should come to the thigh level. After that, step forward with the other foot and swing the kettlebell to the other side.
 - c. Look forward throughout the movement
 - d. This is even more functional than “Seated Russian twist” because it is done walking instead of sitting
3. Rotations in rack position
- a. Clean two kettlebells into the rack position
 - b. Bend your knees a little bit to mimic the game stance in basketball
 - c. Cross your fingers
 - d. Start rotating your body from the hips. Knees are not rotating. Try to rotate as fast as possible
 - e. This exercise develops explosive rotation strength, which is a great benefit in body fakes or change of directions. It also activates the deep and supporting core muscles in a great degree, and increase the metabolism in between the vertebrae disks (Arvonen & Kailajärvi 2002, 29).
4. Towel swings
- a. You need to have a strong towel in this exercise. Loop the towel through the handle of the kettlebell so that you have approximately the same length on each side
 - b. Lift the kettlebell with the towel and take game stance position. Start rotating the kettlebell all the way around your body
 - i. Perform the same amount of repetitions on both directions
 - c. Start with lighter weight, so that you are able to control it all the time

- d. This is an extremely dynamic exercise. It works your core from all the angles and develops strength in the game stance. You are also working a lot with your grip strength because of the towel
5. L-sit
- a. Sit down and place one kettlebell on each side so that the handle is pointing up. Choose two heavy kettlebells, so that they will not fall down and they are very stable
 - b. Grab the handles and lift yourself up with straight legs. Legs form a 90 degree angle with your upper body
 - c. Hold the position. If you are able to do one minute, that is a very good time
 - d. It is a great and challenging exercise for your whole midsection. It is working also your hip flexors (psoas major, psoas minor, iliacus, and rectus femoris) in order to keep the legs straight in the air, and your arms to stabilize your body. So, this is a great stabilization exercise
6. L-sit with knees to the chest
- a. This is exactly the same exercise as the “L-sit”, except once you have lifted yourself up, bend your knees to bring them to the chest, and after that extend your knees to get back into the starting position
 - b. This exercise is more dynamic than the “L-sit” but it is also a great stabilization exercise
7. Windmill
- a. Lift the kettlebell into an overhead position
 - b. Spread your legs a little bit wider than your shoulder width, so that you have a nice, firm stance. Keep your legs straight throughout the movement.
 - c. Bend to the side and touch the floor with the “free” hand, next to the opposite foot of the arm in which the kettlebell is
 - i. Keep your eyes on the kettlebell at all the time
 - d. Come all the way up and repeat
 - e. This is great exercise for lateral flexion. It develops the quadratus lumborum (a low-back muscle) as well as the obliques

8. Jackknives

- a. Lie on your back and lift the kettlebell up from the handles so that the bottom is pointing up
- b. Lift your upper body and legs simultaneously so that they will touch each other in the centre. Legs and arms are held straight throughout the movement
- c. Lower yourself into the starting position and touch with straight arms the floor with the kettlebell

9. Double jackknives

- a. Exactly the same exercise as the “Jackknives”, except this is done with two kettlebells, one in each hand

10. Alternating jackknives

- a. Exactly the same exercise as the “Double jackknives”, except this is done with one leg and arm at a time.
- b. Touch with the opposite arm to the opposite leg, after that alternate
- c. This movement adds a little rotational strength into the exercise

7.8 Balance

1. Slingshot

- f. Rotate the kettlebell around your body with straight arms and legs. Keep your back straight as well
- g. Work on both directions

2. Single leg slingshot

- a. Exactly the same exercise as the “Slingshot”, except this is done by standing with one leg
- b. Try not to touch the floor with the lifted leg
 - i. If you lose balance, try to correct your stance by jumping or gently with the free leg
- c. Work on both directions
- d. One of the benefits of this exercise is the tremendous proprioceptive work at the ankle

- i. “Proprioception is the system of pressure sensors in the joints, muscles, and tendons that your body uses to maintain balance.”
(Verstegen & Williams 2004, 35)

3. Single leg slingshot squat

- a. Exactly the same exercise as the “Single leg slingshot”, except this is done with a bent knee, in a squat stance
- b. This works all the stabilizing muscles in the knee joint as well as in the ankle. It is a great exercise to warm up the legs

4. Figure 8

- a. Pass the kettlebell between your legs to your other hand
- b. As you pass the kettlebell, you can have a little up and down movement from your legs
- c. Remember to keep the back arched throughout the movement
- d. Work on both directions

5. 1 leg 1 arm bent-over row

- a. Stand on one leg, opposite to the arm in which you hold the kettlebell, and bent over by lifting the leg in the air way back, so that there would be a straight line from the head to the toes
 - i. Your back is slightly arched , and the abdominals are drawn in
- b. After you have reached this position, lift the kettlebell to your chest and hold it there for couple of seconds, so that you are aware of your balanced stance.
Lower the kettlebell back to the starting position
 - i. Let the kettlebell come all the way down so that you can feel a stretch in the muscles of the scapula. This is the way you will go through the whole range of motion and to recruit more muscles into the movement
- c. You can do this exercise either ipsi- or contra-laterally
- d. This is a great exercise for the hip stability and to work the cross-body connection from your shoulder to the opposite gluteus

6. 1 leg 1 arm bottoms up curl and press

- a. Stand on one leg and have the kettlebell hanging in front of you with a straight arm, either on the same side or opposite arm

- b. Curl the kettlebell so that the bottom points up. Press the kettlebell and hold the bottom pointing up throughout the lift
 - c. Hold the kettlebell for couple of seconds at the top position and lower it under control back to the starting position
 - d. During the movement, try not to touch the floor with the lifted leg
7. 1 arm 1 leg press with the knee lift (contra-lateral)
- a. Stand on one leg and have the kettlebell on the opposite arm
 - b. As you push the kettlebell up, simultaneously lift the same side knee up high
 - c. This is a very good exercise for balance. The exercise is very close to the movement of a lay-up or a one hand dunk.
 - i. The better you control your body the easier the dunking and making a lay-up will be
 - d. This can be done also by stepping on the top of the box which will activate more the gluteus muscles
 - e. This is a very beneficial exercise for athletic movement
 - i. It is more natural to perform any activity with the opposite arm and leg. As an example dunking and running

7.9 Joint health & Flexibility

1. Halo
 - a. Grab the kettlebell from the sides, so that the bottom will point up
 - b. Start rotating the kettlebell over your head. Try to keep your head still and work with your shoulders
 - c. Work on both directions
 - d. Excellent for shoulders. Works them in all the different angles
2. Standing pullover stretch
 - a. Grab the kettlebell from the handles so that the bottom is facing up. Hold it in front of the chest
 - b. Push the kettlebell back behind your head and bring it back to the starting position
 - c. This exercise stretches the upper back, shoulders, rib cage, and the chest

3. Hip circles
 - a. Lift one kettlebell in front of your chest and hold it from the horns
 - b. Take approximately a hip width stance
 - c. Work on both directions
 - i. Bend your back forward, as you would in the “Good morning” exercise. After that, come up from the right side forming a half circle. Bend your back again and this time, come up from the left side.
 - ii. Start by making a half circle to the right side, to the position where your back is bent. Come straight up and repeat the same movement now starting to the left side.

4. Cossack lunge
 - a. Hold the kettlebell from the handles in front of your chest
 - b. Take a wide stance and move your body from side to side laterally while staying low all the time. Keep your feet over your toes.
 - c. Keep your back arched and look forward
 - d. This is a great variation for lateral lunge and it promotes dynamic flexibility and strength of the adductor musculature, which is a great benefit in lateral type of movement on the court, for example defense

5. Hip flexor stretch with the turn
 - a. Hold the kettlebell from the handles in front of your chest
 - b. Lower yourself into the lunge position. Come up by simultaneously turning 180 degrees and lower yourself again into the lunge position but this time other leg is in the front
 - i. Keep the legs in the same spot throughout the movement

6. Leg adductor stretch
 - a. Sit down and spread your legs as wide as possible. Place the kettlebell behind your head.
 - b. As you exhale, start lowering yourself towards the ground. As you inhale, lift yourself back to the starting position
 - c. Follow the technique points
 - i. Lift your chest up, so that the back will not be rounded

- ii. Keep your legs on the ground all the time throughout the movement, do not lift the knees

7. Seated good morning stretch

- a. Sit down and place the kettlebell behind your head. Keep your legs straight and together.
- b. As you exhale, start lowering yourself down. As you inhale, lift yourself up to the starting position
- c. This stretches the hamstrings and the lower back

7.10 Hand-eye coordination

1. Open palm clean

- a. Clean the kettlebell and release it in the air. Catch the side of the kettlebell in a rack position, not the handle
- b. Toss it on the air and grab the handle

2. Double open palm clean

- a. Exactly the same exercise as the “Open palm clean”, except this is done with two kettlebells

3. Open palm snatch

- a. Snatch the kettlebell and release it in the air. Catch the side of the kettlebell in an overhead position, not the handle
- b. Remember to look at the kettlebell when in overhead position
- c. Toss it back on the air and grab the handle

4. Double open palm snatch

- a. Exactly the same exercise as the “Open palm snatch”, except this is done with two kettlebells

5. Flip and catch

- a. Swing the kettlebell, release the grip and flip it
- b. Catch the kettlebell in the air from the handle and repeat the movement

- c. This exercise should be done on both directions, flipping forwards and backwards

- 6. 1 arm flip and catch
 - a. Exactly the same exercise as the “Flip and catch”, except this is done with one arm
 - b. This exercise should be done on both directions, flipping forwards and backwards

- 7. Double flip and catch
 - a. Exactly the same exercise as 1 arm flip and catch, except this is done with one kettlebell in each arm
 - b. Swing and flip the kettlebells at the same time
 - c. This exercise should be done on both directions, flipping forwards and backwards

- 8. Double flip and catch opposite directions
 - a. Exactly the same exercise as the “Double flip and catch”, except this is done by flipping one kettlebell forward and the other backwards
 - b. This exercise is the most challenging of all the throws

- 9. Swing throw with partner
 - a. Face your partner. In the beginning the gap between you should be pretty close, approximately one and a half metres. As you get comfortable with throwing and catching the kettlebell, increase the distance
 - b. Swing the kettlebell and as it comes in front, release the grip and throw it to your partner.
 - i. Release the kettlebell so that the handle will point up. This enables your partner to catch the kettlebell easily and safely
 - ii. As your partner catches the kettlebell, he will throw it the same way back to you
 - c. If the throw is too short and you have to lean forward to catch the kettlebell, just let it drop on the ground

- i. If you try to catch the kettlebell, it will put much more stress on your back, and you are not able to control the kettlebell. You should move the kettlebell instead of the kettlebell moving you
- d. Work with two hands, by alternating the arms, or by working on one side at the time

10. Double swing throw with partner

- a. Exactly the same idea as in the “Swing throw with partner”, except this is done with one kettlebell in each arm

11. Swing throw with a flip with partner

- a. Exactly the same exercise as the “Swing throw with partner”, except you add a flip into it
- b. This should be done on both directions, forwards and backwards
- c. Work by alternating the arms or by working on one side at the time

12. Double swing throw with a flip with partner

- a. Exactly the same exercise as the “Double swing throw with partner”, except this is done by adding a flip into it

13. Suitcase throw with a partner

- a. Have the kettlebell on the side, like you would carry a suitcase.
- b. Swing the kettlebell and throw it to your partner. Your partner will catch the kettlebell the same way.
 - i. If you throw the kettlebell with your right arm, your partner will catch it with his left arm
- c. Keep your body very tight, especially when you catch the kettlebell
- d. Work on 1 arm at the time
- e. This is a tremendous workout for obliques and the whole midsection

14. Double suitcase throw with a partner

- a. Exactly the same exercise as the “Suitcase throw with partner”, except this is done with two kettlebells at the same time. One on each side

7.11 Explosive power

Lower extremities

1. Box jump clean
 - a. Hold a kettlebell in both of your arms on the side of your body, with slightly bent arms
 - b. Face the box and jump explosively on top of it. As you jump, help with your arms by bringing the kettlebells into the rack position. So, basically you clean the kettlebells
 - i. This movement mimics the vertical jump
 - c. In the beginning you might want to step off the box, instead of landing by jumping. This is how your ligaments are not being stressed too much in the beginning
 - i. If you land by jumping, bring the kettlebells in the air back to the starting position
 - d. Try to land on the box as quietly as possible
 - e. The box is too high if:
 - i. you cannot land quietly
 - ii. the landing squat is deeper than your takeoff squat
2. Lateral box jump clean
 - a. This is exactly the same exercise as the “Box jump clean”, except this is done by jumping from the side of the box to the top of the box
3. 1 leg box jump
 - a. Hold a kettlebell from the horns in front of your chest
 - b. Face the box and jump explosively on top of it with one leg
 - c. You can land by stepping or jumping back to the starting position
 - d. If necessary, use a lower box than in the “Box jump clean” exercise
4. 1 leg lateral box jump
 - a. This is exactly the same exercise as the “1 leg box jump”, except this is done by jumping from the side of the box to the top of the box
 - b. The key is a stable and quiet landing on one leg
 - c. Perform with both legs from both sides

5. Jumping lunge
 - a. Have a kettlebell in each arm
 - b. Start with the split squat position, one leg in the front and one in the back
 - c. Squat down so that the kettlebells gently touch the floor and explode up by jumping and switching legs in the air. Repeat now with the other leg in the front

Upper body

6. Push off push up
 - a. Place two kettlebells on the ground so that the handles are pointing up
 - b. Grab the handles and make a normal push up, except explode when coming up. Push off with the help of your arms and release your hands from the handles
 - c. As you start falling towards the ground, grab the handles and repeat the movement again
 - d. In the beginning you might want to place the kettlebells so that they are lying on their side. Done in this way, the kettlebells are much more stable
7. Clap push up
 - a. Exactly the same exercise as jump off push up, except when you release the grip, clap your hands together
8. To the ground and on the kettlebell
 - a. Place two kettlebells so that the handles are pointing up
 - b. Grab the handles and make a normal push up. As you come up to the starting position, release your hands from the handles at the same time and land on the floor between the kettlebells
 - c. Perform another push up on the ground but this time you really need to explode when coming up in order to jump back to the starting position and grab the handles
9. From side to side
 - a. Place one kettlebell on the floor so that the handle is pointing up
 - b. Grab the handle with one hand and place the other on the floor

- c. Make a push up and explode up by switching the hand on the handle in the air.
Repeat the movement.

8 Conclusion

In this project the main idea was to increase players' athletic performance and introduce them to a new exercise tool.

I have presented a lot of different lifts. The best thing athletes should do is to try them out and afterwards pick up a couple of lifts that suit best to their skill level. They should master and get familiar with those lifts. As the body adapts to the training and the athlete feels comfortable about the lifts, it is time to move on into more demanding lifts.

I chose the lifts due to the benefits to basketball. I went through how basketball players move on the court and chose the lifts that will improve the movements.

Coaches and athletes are not paying attention on mastering the skills. If the athlete or coach allows to perform exercises sloppy, it won't make any good to athlete's performance. Like I mentioned earlier, it is not about the exercise, it is how you do the exercise. Coaches and athletes need to pay attention on details, to perform all the lifts correctly and to get the most benefit out of the exercises. You need to demand excellent technique for Kettlebell lifting as well as any other type of exercise method. It is the same in basketball, the team that will do better the basic things, will most likely win the game. If athletes practise just for practise and never set goals, they might never achieve where they really want to be.

After I found out how effective tool kettlebell can be, I wanted to make a teaching video of it. Before I even had tried a kettlebell, I was skeptical. I thought that it is just another gimmick on the market. This way of thinking is also among many athletes, and I want to change it by making this video. Video as a teaching tool is very efficient, and in my case I think it is the best way to show athletes and coaches, how the lifts are executed properly.

Another reason why I wanted to create this teaching video is because I have seen so many athletes using kettlebells with little or no expert instruction. Because of this they are more likely to hurt themselves or make a mistake by using the kettlebells like traditional weights.

My project consists of the lifts and their techniques and information concerning the safety procedures, learning and teaching the lifts, and injury prevention. I want to let athletes think about what exercises are appropriate for them and create their own programs. However, if

there will be another project related to my topic, I would suggest it to involve more of kettlebell training programme design. It should cover comprehensive information about numbers of repetitions and sets, choice of exercise, order of exercises, rest periods, repetition velocity, and frequency. All these training principles should be presented in a reasonable manner concerning the sport of basketball.

Athletes and coaches should use this video as guidance for their kettlebell journey. I have created the material in a way that is easy to follow and absorb information.

If you do what you have always done, you'll get what you have always got. To get something different, you have to force your body to perform in a way it has never done before through progressive overload. As a coach or athlete, you should always demand the most. To do anything less than your best, is to sacrifice your gift. Train hard and expect results.

Bibliography

Aaberg, E. 1996. Muscle mechanics. Human Kinetics. USA. pp. 17-32

Arvonen, S., & Kailajärvi J. 2002. Suomalainen Ryhtiliike ry. Helsinki. pp. 16, 18, 19, 22, 29, 35-37, 42, 68, 77

Bird, S., Tarpinning, K., & Marino, F. 2005. Sports Med. Review article. pp.841-851

Boyle, M. 2004. Functional Training for Sports. Human Kinetics. USA

Boyle, M. Designing Strength Training Programs and Facilities. e-book

Cook, B. 2002. Total Basketball Fitness. Coaches Choice. USA. pp.148

Cook, G. 2003. Athletic Body in Balance. Human Kinetics

Cotter, S. 2007. Encyclopedia of Kettlebell Lifting series 1

Cotter, S. 2007. Encyclopedia of Kettlebell Lifting series 2

Everett, G. 2008. Olympic Weightlifting a Complete Guide for Athletes & Coaches. Catalyst Athletics. USA. pp.17, 23, 30, 227-229

Häkkinen, K. 1990. Voimaharjoittelun perusteet. Gummerus Kirjapaino Oy. Jyväskylä. pp. 104-105, 108

Paavola, T. 2008, Toiminnallisuuden Anatomia. e-book

Rippetoe, M. & Kilgore, L. 2007. Starting Strength (2nd Edition). The Aasgaard Company. USA. pp. 8-63

Rooney, M. 2009. Speed and Strength Training for Youth. Coaching clinic lecture material

Tsatsouline, P. 2006. Enter the Kettlebell. Dragon Door Publications. USA

Verstegen, M. & Williams, P. 2004. Core Performance. Rodale. pp. 27-28, 35, 74-75, 255-256

Westerlund, E. & Summanen, R. 2001. Let's Beat Them In Ice Hockey. Polar Electro Oy.
Kempele. pp. 15-16