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Planning a Fitness Course for KAMK Sports



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ABSTRACT

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The objective of this practice-based thesis, which included also quantitative and qualitative research methods, was to plan KAMK Sports an informative fitness course focusing on different fitness disciplines in Finland, which would be suitable for both, the students who already have experience from strength training and possibly also from competitive fitness as well as for those who might not have much experience from those or have no experience at all. The course is suitable for all students, but only those students that can include the course to their studies will also get free choice study credits from it.

The course was planned by following the new product development and the new service development frameworks. The information needed for the course contents was searched and collected from different reliable sources, including for example different books written by professionals from the competitive fitness field and websites of the official national and international federations operating in the field. In addition, a quantitative research method in a form of an online questionnaire was used as a part of the planning process to give the potential participants of the course an opportunity to participate to the planning process of the course. Also, a qualitative research method will be used after the actual implementation of the course to collect feedback, which will be used to change and develop the course for its next implementation.

The first implementation of the course will most likely take place during the spring semester 2019, which is why the successfulness of the course can not be evaluated yet. However, the course materials, including the lecture materials, plans for each contact session, and all the tasks and exercises are now ready for KAMK Sports' implementation of the course, and they are all planned so that they also take into consideration the needs and wishes of the students of Kajaani University of Applied Sciences (in other words, the customers). For this reason, as well as because the topic of the course is very current, the course is very likely to be successful. The course will last for 1-2 months depending on how often there will eventually be contact lessons, and if it gets positive feedback, it will be organized again at some point.

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LIST OF SYMBOLS

1 INTRODUCTION

A phenomenon called fitness boom has been going on in the world for several years now, and it does not seem to be going anywhere. More and more people all over the world are getting interested in different fitness disciplines and want to take their gym hobby to the next level. In other words, they want to make fitness even bigger part of their life and test their limits by preparing themselves for a fitness competition. However, there are also a lot of people who are not sure what preparing for a fitness competition exactly requires. They are not sure what fitness discipline would suit them best, what kind of training and dieting different fitness disciplines require, what kind of phases there are when you are preparing for the competition, what kind of rules there are etc.

Since there are a lot of students in Kajaani University of Applied Sciences (KUAS) who go to the gym and use KAMK Sports' services on a regular basis, there are also likely to be students who are considering taking their gym hobby to the next level and would like to know more about fitness disciplines and competing but are not quite sure where to start. In addition, especially sports students would probably be interested in knowing more about fitness disciplines and competing, since this kind of information would be very beneficial for them when it comes to both their own possible fitness careers as well as their future careers as sports instructors.

The author of this thesis is also one of those sports students who wanted to know more about different fitness disciplines and benefit this information in both her own future fitness career as well as in her future profession as a sports instructor. For this reason, she decided to plan a fitness course for KAMK Sports, which is the commissioning party of the thesis, so that in addition to gaining more information about the different fitness disciplines by herself, she could also share the information she had found with other students who were interested in the field and wanted to get more information about it.

1.1 The commissioning party of the thesis

The commissioning party of the thesis was KAMK Sports, which offers various kinds of sports services mainly for the students of KUAS, which is why they offer their services with very low prices. Their aim is to increase the well-being of the students and make it possible for them to do sports throughout their studies. The activities are organized in the school's sports premises and other sports premises near the school, and they include a variety of instructed group exercise lessons as well as opportunities for the students to use the sports premises of the school, such as the sports hall and the gyms, independently. (KUAS 2017a.) In addition, KAMK Sports also offers personal training services for the students and the staff of the school, and various kinds of sports and well-being services, such as health and well-being days, lectures, and workshops, for the companies outside KUAS (KUAS 2017b).

KAMK Sports was perfect commissioning party for a thesis like this, since this is probably the first time when this kind of course is being organized anywhere in the world, and since KAMK Sports is quite small organization and it has relatively small number of customers, it also offers a good opportunity to test how organizing this kind of course would work in other similar organizations. Testing this kind of course would be slightly more challenging in some bigger organization with more customers, since now there was e.g. no need to make a very specific marketing plan or commercialization. The author also got a lot of freedom when planning the course, since there were no strict limitations set by KAMK Sports related to e.g. the course contents or teaching and studying methods.

1.2 The objectives of the thesis

The first objective of this thesis was that the author would first gain more knowledge about competitive fitness by herself by using different reliable sources. The second objective was that she could share this knowledge with other students

interested in the topic by planning KAMK Sports an informative fitness course suitable for both, students with more experience and knowledge from strength training and possibly also from competitive fitness as well as for those who might have barely any previous experience or knowledge. The third goal was that the knowledge shared would be as interesting and relevant for the course participants as possible and it would be taught and studied by using the teaching and studying methods preferred by the participants themselves. This is because the course was decided to be planned and implemented as a service product, meaning that it had to meet the customers' needs and wishes as well as possible to make it customer oriented.

At the end of the course, the participants should have gained some more general as well as some more specific knowledge related to all different topics and themes related to competitive fitness, which they could then utilize in their future professions as well as in their own gym hobbies and possible fitness careers. In other words, the course should answer the question "What is competitive fitness?", which was also the main research problem when doing this thesis.

1.3 How the thesis was implemented

The new product development and the new service development frameworks were decided to be used when planning as well as when organizing and implementing the course, which made this thesis practice-based. Moreover, there was a quantitative research method used as a part of the planning process to collect some preliminary information about the potential participants of the course as well as to ask them e.g. about their interests towards the different topics and themes related to competitive fitness, different teaching and studying methods, and possible times for the contact lessons. In other words, the idea was that also the potential participants of the course (i.e. the customers) would be included in the planning process of the course. Also, a qualitative research method will be used after the first implementation of the course to collect feedback from the course, which will be then used to develop the course even more. The first implementation will be done by KAMK Sports and will most likely take place during the spring 2019.

1.4 Why there is a need for a course like this

Apparently, there are no similar fitness courses organized anywhere else before, which makes this course extremely unique. There are several personal training courses for coaches working at the gym environment as well as a few educations particularly for fitness coaches even in Finland, but those courses are only for people who are already professionals in the fitness field and want to deepen their skills and knowledge and get an official certificate to work in the field. There are also several weight loss courses to which normal people without any previous experience from training can participate, but these courses do not have much to do with competitive fitness.

Moreover, even though KAMK Sports already had several different sports services offered for the students of KUAS, including e.g. personal training services and group exercise lessons, they did not have a course focusing on competitive fitness and neither did KUAS. For this reason, this course brings something new to KAMK Sports' services as well as to a course selection for the students of KUAS in general, in addition to supporting KAMK Sports' new online coaching program called Next Step which started in the beginning of January 2018.

2 FUNDAMENTAL CONCEPTS RELATED TO COMPETITIVE FITNESS AND THEIR DEFINITIONS

Since there is a vast number of factors to be considered when preparing for any type of fitness competition, there are also several topics and themes that are discussed during the fitness course. For example, the course discusses what kinds of requirements each of the different fitness disciplines in Finland have, what kind of rules there are, what kind of training and dieting is required, what happens in the actual competition and onstage etc. Next, each of the most fundamental concepts related to the topics that are discussed during the course are explained. The concepts are not explained too much in detail since some of the participants of the course are likely to be students who do not know that much e.g. about training and dieting and different terms related to those. The idea of the course was, after all, to be suitable for both, the students with more experience from gym training, dieting and fitness disciplines, as well as for those who do not have that much experience.

2.1 Fitness disciplines in Finland

Competitive fitness is a sport in which the athletes (both males as well as females) are aiming for a certain kind of physique, including specific requirements for the muscle mass, size and definition as well as the body's fat percentage, which are all dependent on the discipline in which the athlete is competing. To meet the requirements for the physique, the athletes are combining certain type of strength training and aerobic training in addition to a specific and strictly monitored nutrition, all being changed throughout the preparation phases for a competition. In addition to how the physique looks, the athletes must also be able to present themselves and their physique onstage with confidence, poise and grace, and possibly also perform some required routines included in the competition rounds of their discipline.

In this sport, the judging is based on the athletes' physical appearance, stage presence, and their ability to present themselves and their physique. The athlete whose physique meets the discipline's requirements the best, has the best stage presence, succeeds in presenting the physique, and performs the best in the possible routines, wins the competition. The judging criteria used in Finland are based on the official judging criteria created by the International Federation of Bodybuilding and Fitness (IFBB), which is the international organization of the sport and includes national federations from 185 different countries (IFBB 2017a).

In Finland, there are eight fitness disciplines in total; five of these begin for women and three for men. In all disciplines, the requirements for the physique as well as the competition rounds differ from each other, and even though there are same disciplines also in many other countries, the requirements can be slightly different between the countries. The following descriptions of the eight disciplines competed in Finland are mostly based on the information and descriptions found from the Finnish Fitness Sports Association's website.

2.1.1 Bikini fitness

Bikini fitness is relatively new fitness discipline since it was officially recognized by the IFBB in November 2010, and introduced first in 2011 (IFBB 2017f, 3; n.d.). This discipline is for women who keep their body in decent shape and live and eat healthy. The aim is to have muscles with nice and firm appearance and low body fat percentage. Too muscular as well as too lean physique should be avoided in addition to muscle separation and/or striations. In other words, the muscles should have a bit softer and smoother appearance than in body fitness, and they should not have similar kind of separation, definition, as low body fat percentage, dryness and density. The appearance should be well-shaped, fit, healthy and attractive, and upper and lower body should be proportional. In addition, the judges also assess the competitor's individual style of presentation, which includes personal confidence, poise and grace, the tightness and tone of the skin, which should be smooth and healthy looking without any cellulite, as well as the face, hair and makeup. (IFBB 2017f, 8-9; Finnish Fitness Sports Association 2016a.)

The competitors must wear two-piece bikini of which color and pattern can be freely chosen by them. However, PVC coated fabrics are not allowed. The bikini must be in good taste, and the bottom must be V-shaped and cover at least 1/3 of the glutes and the whole bottom part of the frontal area. They must also wear high-heels of which style and color can be freely chosen by them. However, they are not allowed to wear platform high-heels, the heel can be a maximum of 12 cm high, and the sole can be a maximum of 1 cm thick. Also, the jewelry is allowed provided it is in good taste. (Finnish Fitness Sports Association 2016a; IFBB 2017f, 6.)

In Finland, there are five different height-based categories in bikini fitness: up to and including 160 cm, up to and including 164 cm, up to and including 169 cm, up to and including 172 cm, and over 172 cm. If there are five or less competitors registered in a certain category, these competitors are then moved to higher height class. There are also separate categories for juniors and masters, of which juniors have two and masters three age-based categories. Juniors' categories include 18 to 20-year-olds and 21 to 23-year-olds. To be able to compete in the first category, the competitor must be at least 18 years old on the competition day, and she can participate to this category until the end of the year in which she turns 20. These juniors are only allowed to compete in every second competition season, which means the season between the 1st of January until the 30th of June, or the 1st of July until the 31st of December. Junior can start to compete in the second category in the same year in which she turns 21, and she can compete in this category until the end of the year in which she turns 23. In this category, there are no limitations for how often the junior can compete. When it comes to the masters' category, in turn, there are separate categories for 35 to 39-year-olds, 40 to 44-year-olds and over 45-year-olds. The competitor can start to compete in the first master's category in the same year in which she turns 35. There are no preliminary elimination rounds in either juniors' or masters' categories. However, in the height-based categories there is an elimination round if there are more than 15 participants registered in the same category. (Finnish Fitness Sports Association 2016a.)

In the elimination round, all the participants of the category go to the stage at the same time and form a line in a numerical order. They are then divided in two equal

groups so that the other group is on the left side of the stage and the other group on the right side. The center portion of the stage is left open for the comparisons of the competitors, during which the competitors are brought to the center portion of the stage in a maximum of groups of five, and they are instructed to perform four quarter-turns to the right with certain kind of poses which can be seen in Picture 1. After all the comparisons, the one big line is formed again in a numerical order, after which the competitors leave the stage, and the judges choose 15 competitors that will continue to the next round. (Finnish Fitness Sports Association 2016a.)



Picture 1. Quarter turns and poses in bikini fitness (Finnish Fitness Sports Association 2016a).

After the possible elimination round, there is the prejudging (i.e. round 1), during which all the 15 competitors of the category go onstage at the same time and form a line in a numerical order. Next, the competitors perform four quarter-turns to the right in groups of five (again in the numerical order), after which each of the judges makes requests for comparison for the competitors according to which they are then divided into first, second and third comparison groups, in which they again perform four quarter-turns to the right. Those five competitors that got the most requests for comparison belong to the first comparison group, the ones who got the second most belong to the second group etc. The requests for comparison are given to the chief judge who has the right to discard or amend a judge's individual request for comparisons if warranted. It is also possible that some competitors are

asked to join more than one comparison. After round 1, each of the competitors should have at least two comparisons; one from the comparisons done in the numerical order, and one from the comparisons based on the judges' requests. After the judges have scored the competitors, six best competitors get to the final round based on these scores. (Finnish Fitness Sports Association 2016a.)

The final round starts with I-walking during which the competitors have an opportunity to present their body and charm on the move individually. The competitors enter the stage individually in the numerical order and perform the I-walk in the following way: 1) The competitor walks along the back edge of the stage, stops in the middle of the stage, turns towards the audience and performs one freely chosen pose from the front, 2) the competitor walks towards the judges to a certain spot marked on the stage, stops and performs four freely chosen poses, which must present the competitor's physique from the front and the back and are done inside the marked area, and 3) the competitor walks to the line-up at the rear part of the stage. The I-walk should not last for more than 30 seconds. (IFBB n.d.; Finnish Fitness Sports Association 2016a.)

After I-walking, the competitors are asked to come to the center portion of the stage in the numerical order for the comparison, in which they are again instructed to perform four quarter turns to the right. However, after they have turned twice to the right and have their backs towards the judges, they are asked to walk to a line marked on the back edge of the stage on which they perform the back stance again. Next, they turn twice to the right so that they are facing the judges, walk back to the front edge of the stage and perform the front stance again (Finnish Fitness Sports Association 2016a).

2.1.2 Body fitness

Body fitness was officially recognized as a new fitness discipline by the IFBB in October 2002. It is aimed for a wide group of well-shaped women who train in the fitness centers and follow a healthy sports diet, and want to compete only in the physique rounds, without the routine rounds. The muscles should have round and

firm appearance with low body fat percentage. The physique should not be too muscular or too lean, and too deep muscle separation and/or striations should be avoided. In other words, the muscles should have shape but not the size, definition or vascularity that is seen at women's physique competitions. In addition, the judges also assess the competitor's individual style of presentation, which includes personal confidence, poise and grace, as well as the skin, which should be smooth, healthy in appearance and free of cellulite, and the face, makeup and hair which should complement the look. (IFBB 2017e, 1, 8; n.d.)

The competitors must wear two-piece bikini which must be appropriate and in good taste and of which color, material and fabric can be freely chosen by them. The bottom of the bikini must cover at least half of the glutes and the whole bottom part of the front area. The competitors must also wear high-heels of which style and color can be freely chosen by them, except that the shoe soles can be a maximum of 1 cm thick, and the heel can be a maximum of 12 cm high. Moreover, all the other jewelry except the wedding ring is not allowed. (Finnish Fitness Sports Association 2016c; IFBB 2017e, 5.)

In Finland, there are four different height-based categories in body fitness: up to and including 158 cm, up to and including 163 cm, up to and including 168 cm, and over 168 cm. There are also separate categories for juniors and masters, which are the same than in bikini fitness. Again, there are no preliminary elimination rounds in either juniors' or masters' categories, but in the height-based categories there is a preliminary elimination round if there are more than 15 competitors registered in the same category. The preliminary elimination round in body fitness is the same than the one in bikini fitness, except that the poses done during the quarter-turns are different (see Picture 2.) (Finnish Fitness Sports Association 2016c.)

After the possible preliminary elimination round is the prejudging, which is the same for body fitness than for bikini fitness, except that the poses done are again different than in bikini fitness. After prejudging, six best competitors get to the final round, beginning with individual I-walking which is done in the numerical order. In body fitness, the I-walking is performed in the following way: 1) The competitor

walks along the back edge of the stage, stops in the middle of the stage, turns towards the audience and performs one freely chosen pose from the front, 2) the competitor walks towards the judges, stops to a certain spot marked on the stage, and performs one pose while facing the audience (i.e. the front stance), 3) the competitor performs the turns and presents her physique with freely chosen poses, which must be done inside the marked area, and 4) the competitor walks to the line-up at the rear part of the stage. (Finnish Fitness Sports Association 2016c; IFBB 2017e, 8-9.)

After I-walking, the competitors are asked to come to the center portion of the stage in the numerical order for the comparison, in which they are instructed to perform four quarter turns to the right. After the first comparison, the chief judge changes the competitors' order, after which there is the second comparison, which is done in the same way than the first comparison (Finnish Fitness Sports Association 2016c).



Picture 2. Quarter-turns and poses in body fitness (Finnish Fitness Sports Association 2016c).

2.1.3 Wellness fitness

Wellness fitness is an extremely new fitness discipline since it was officially recognized by the IFBB on November 2016. It is aimed for women who want to develop muscular physique without clear muscle separation. In addition, the clear details of the muscles, extremely low body fat percentage, similar kind of dryness and hardness than in body fitness, and similar kind of muscle size and quality seen in women's physique should be avoided. The physique should be athletic and aesthetically pleasing, and the body mass should be bigger than in bikini fitness. In other words, wellness fitness can be located somewhere between bikini fitness and women's physique. (IFBB 2017i, 3; n.d.; Finnish Fitness Sports Association 2016g).

The assessment starts with a general impression of the physique and includes the assessment of the overall body development and shape, how balanced, symmetrically developed, complete and athletic looking the physique is, the tone and condition of the skin, the hair, and how well the athlete can present herself with poise, confidence and grace. Just like in bikini fitness, the appearance of the muscles should be nice and firm, the body fat percentage should be low, the physique should not be too muscular or lean, and muscle separation and/or striations should be avoided. The features of the different muscle groups should not be too visible, and there should not be similar kind of dryness or muscle hardness than in body fitness or similar kind of muscle size and quality than in women's physique. In addition, the skin should be smooth and healthy in appearance, without any cellulite, and the hair and makeup should complement the look. The rules for the competition outfit are the same for wellness fitness than for bikini fitness. (IFBB 2017i, 7; Finnish Fitness Sports Association 2016g.)

In Finland, there are four different height-based categories in wellness fitness, which are the same than in body fitness. Again, if there are five or less competitors registered in some certain category, these competitors are then moved to higher height class. There are no separate categories for juniors and seniors. (Finnish Fitness Sports Association 2016g).

If there are more than 15 registered competitors, there will be a preliminary elimination round, which is the same for wellness fitness than for bikini fitness. After the elimination round comes the prejudging, which is again the same for wellness fitness than for bikini fitness. Also, the poses performed during the quarter-turns in wellness fitness are the same than in bikini fitness (see Picture 1.). After prejudging is the final round which is done in the same way than in bikini fitness, including both, the I-walk as well as the comparison between all the finalists while they are performing the quarter-turns and the poses. However, what is different about wellness fitness when compared to two previous disciplines, is that the judges are assessing the competitors throughout the whole time they are onstage, especially during I-walking and when they are performing the quarter-turns and standing in the line. The competitors must have good posture and look athletic and confident throughout the whole competition. Moreover, they are not allowed to pose while standing in the lineup, but they must be in a standardized relaxed position in which they should stand erect with their other hand casually on their hip and other arm freely by their side. Head and eyes should be facing straight forward, shoulders should be back, chest up and stomach pulled in, and the legs should be side by side in the same line. (Finnish Fitness Sports Association 2016g.)

2.1.4 Women's fitness

Women's fitness is relatively old fitness discipline since it was officially recognized as a new fitness discipline by the IFBB in December 1995. It is aimed for women who want to develop less muscular but still athletic and aesthetically pleasing physique, which is also flexible, powerful and acrobatic, as well as show their physique in motion. This is because in this discipline, there are two parts in the prejudging and final round: fitness routine and physique round which is the same than in other fitness disciplines, except that there is no I-walking included in the physique round. During the physique round, the judges perform the assessment in the same way than in the other disciplines. The muscles should have round and firm appearance, the body fat percentage should be low, the physique should not be too muscular or too lean, and muscle separations and/or striations should be avoided. During

fitness routine, in turn, the judges assess the tempo, strength, flexibility, style, personality, athletic coordination and overall performance. The routine should include moves that exemplify strength, endurance and flexibility, and there can be elements from gymnastics, aerobics, dance and other demonstrations of athletic talent. There are no certain moves or movement series required. (Finnish Fitness Sports Association 2016e; IFBB 2017d, 1, 9; n.d.)

When it comes to the rules for the competition outfits, the rules for the outfit used in the physique round are the same than in body fitness. When it comes to the outfit used in the fitness routine, in turn, the outfit can be freely chosen by the competitor provided it is in good taste. The bottom part must cover at least half of the glutes, and the use of different accessories/equipment, such as a hat, jacked, ball, umbrella, stick etc. is allowed provided they have gotten an approval from either the chief judge or other delegate judges (Finnish Fitness Sports Association 2016e).

In Finland, there are no separate height-based categories in women's fitness, but there is a separate category for juniors. The rules for the juniors' category as well as for the other category are the same than for the categories described in the previous disciplines, except that when it comes to juniors' category, there's only one category (18 to 23-year-olds) for them, and they are all only allowed to compete in every second competition season (Finnish Fitness Sports Association 2016e).

If there are more than 15 competitors registered, there will be similar preliminary elimination round than in body fitness. After the elimination round comes the pre-judging round, which begins with the fitness routines. Each competitor comes to the stage individually in a numerical order and performs the routine to a music which can be freely chosen by them. The routine can be a minimum of 60 seconds and a maximum of 90 seconds long. After the fitness routines is the physique round, which includes only the quarter turns with the poses, which are again the same than in body fitness (see Picture 2.), in groups of a maximum of five competitors. There is also another comparison in groups of five, which are formed

based on the judges' requests for comparison. I-walking is not included in the physique round of women's fitness. Six best competitors get to the final round, which begins with the fitness routines and ends with the physique round, which again includes two comparisons of which the first one is done with the competitors being in a numerical order, and the second one in the order decided by the chief judge. (Finnish Fitness Sports Association 2016e.)

2.1.5 Women's physique

Women's physique was officially recognized as a new fitness discipline by the IFBB in November 2012. It is aimed for women who want to develop heavier, bodybuilding-type physique but not as extremely dried, lean and muscular, yet athletic, feminine and aesthetically pleasing. The physique should be more muscular and muscle separation more distinct than in body fitness. However, there should not be as much muscle mass and muscle separation as bodybuilders have. (IFBB 2017g, 3; n.d.; Finnish Fitness Sports Association 2016g.)

The competition outfit for women's physique is partially different when compared to other fitness disciplines. The competitors must wear two-piece bikini, in which the lower stomach and lower back are clearly visible, and the bottom part must cover at least half of the glutes. The bikini can be made of one-colored knitted hologram or velvet fabric, and it can be decorated with crystals or sequins. The outfit can include supporting structures, such as push-up pads, to enhance the appearance. However, the use of metallic underwires is prohibited. In addition, the competitors are not allowed to wear shoes or any other jewelry but the wedding ring, and during the prejudging, the competitors' hair must be tied up so that the shoulder and upper back muscles are clearly visible. The hair can be styled for the finals. (Finnish Fitness Sports Association 2016g.)

In Finland, there is one open category in women's physique competition. If there are more than 15 competitors registered, there is a preliminary elimination round, which is done in the same way than in the previously described disciplines. After the elimination round comes the prejudging round, which consists of two parts: the

quarter-turns, which are done in the same way than body fitness, and four mandatory poses. First, all 15 competitors come to the stage in a numerical order and make one line, in which all of them perform the quarter-turns at the same time. Next, the competitors perform four mandatory poses in groups of a maximum of five competitors. The poses are the followings: front pose, side chest, back pose, and side triceps (see Picture 3.). After all the groups have done the poses for the first time, the judges make requests for comparison for the competitors according to which they are then divided into first, second and third comparison groups, in which they again perform those four mandatory poses. In other words, the pre-judging round continues the same way than in previously described disciplines, except that the competitors always perform those four mandatory poses during the comparisons. (Finnish Fitness Sports Association 2016g.)



Picture 3. Mandatory poses in women's physique (Finnish Fitness Sports Association 2016g).

Six best competitors get to the final round, which starts with the four mandatory poses. The competitors perform the mandatory poses at the same time while being lined up in a numerical order, after which the chief judge can change the order of the competitors for another comparison if there is a need for it. After the mandatory poses, the competitors exit the stage, and are then called back in a numerical order for a posedown, during which they perform freely chosen poses in a lineup for 30 seconds. The competitors do not get any points from the posedown. (Finnish Fitness Sports Association 2016g.)

After the posedown, the competitors enter the stage individually and perform their own individual posing routines, which should be planned to the music chosen by them, last a maximum of 60 seconds, and include all four mandatory poses in addition to the freely chosen poses. All the muscle groups should be presented equally during the routine. The poses are scored based on the muscularity, muscle separation, style, personality, athletic coordination and overall impression. Moreover, the softness, artistry and choreography of the routine are assessed. (Finnish Fitness Sports Association 2016g.)

2.1.6 Men's physique

Men's physique was officially recognized as a new fitness discipline by the IFBB in November 2012. It is aimed for men who want to develop less muscular but still athletic and aesthetically pleasing physique. The physique should be properly shaped and symmetrically developed, combined with balanced muscularity and good overall condition. It should be harmonious, proportional, classical male physique with correct anatomical structure, including certain kind of body framework, spinal curves, proportional limbs and trunk, and straight legs. Also, the vertical and horizontal proportions, i.e. the length of the legs when compared to the upper body and the width of the hips and waists when compared to the shoulders, are very essential. The aim is to have a bit softer and smoother muscular appearance than in bodybuilding, still with the decreased amount of body fat, and without too deep muscle separation and/or striations. In addition, the tone and condition of the skin and the hair are assessed. Moreover, the competitors should have good stage presence and poise, and they should present their physique with confidence and captivate the audience with their charisma and athletic physique. (IFBB 2017h, 3, 11; n.d.; Finnish Fitness Sports Association 2016f.)

The competitors must wear loose-fitting broad shorts, of which color and material can be freely chosen by the competitor. The shorts must cover the whole upper leg and extend to the upper point of the knee. Tight, lycra-style shorts and the use of paddings are not allowed. There should not be any sponsors' logos in the shorts,

but manufacturers' logos, such as Nike and Adidas, are allowed. The competitors are not allowed to wear shoes or any other jewelry but the wedding ring. (Finnish Fitness Sports Association 2016f; IFBB 2017h, 6.)

In Finland, there are three height-based categories in men's physique: up to and including 173 cm, up to and including 179 cm, and over 179 cm. If there are five or less competitors registered in some category, these competitors are then moved to the next height-based category. There are also separate categories for juniors and masters. The rules for juniors are the same than for juniors' categories in women's fitness disciplines. When it comes to the masters' category, in turn, the competitor is allowed compete in this category in the same year when he turns 40. (Finnish Fitness Sports Association 2016f.)

If there are more than 15 competitors registered in the same category, there will be preliminary elimination round which is done in comparable way than in women's disciplines, except that the poses done during the quarter-turns are different for men than they are for women (see Picture 4.). After the elimination round is the prejudging round, which is again done in comparable way than in women's disciplines, except that the poses done during the quarter-turns are different (Finnish Fitness Sports Association 2016f).



Picture 4. Quarter-turns and poses in men's physique (Finnish Fitness Sports Association 2016f).

After the prejudging round, six best competitors get to the final round, during which each competitor enters the stage individually in a numerical order and walks to the center of the front edge of the stage in which he then presents his physique with poses from the front and back, while keeping his hand on his hips. Next, the competitor moves to the rear part of the stage to wait until the rest of the competitors have also presented their physique individually. After this, the competitors line up to a numerical order in the center portion of the stage in which they perform the quarter-turns and poses from the front, left side, back, and right side. The chief judge will then put the competitors to an opposite order, and the turns are performed again. (Finnish Fitness Sports Association 2016f.)

2.1.7 Classic bodybuilding

Classic bodybuilding was officially recognized as a new fitness discipline by the IFBB in November 2005. In this discipline, there are height-based categories that are proportional to the competitors' height and weight. It is aimed for men who prefer lighter "classic" physique rather than developing their muscles to their extreme. In addition to the general impression of the physique, also the individual muscles and muscle groups are assessed, including the muscular bulk, balanced development, density and definition of the muscles. The assessment starts from the head and extends downwards, including the assessment on the hair, face, neck, shoulders, chest, arm muscles, front of the trunk for pectorals, pec-delt tie-in, abdominals, waist, thighs, legs, calves and feet when the assessment is done from the front. When the assessment is done from behind, the upper and lower trapezius, teres muscles, infraspinatus, erector spinae, glutes, the leg biceps group at the back of the thighs, calves, and feet are assessed. Also, the anatomical structure, including the wideness of the shoulders, thickness of the chest, spinal curves, proportionality of the limbs and trunk, and straightness of the legs, as well as the tone and condition of the skin and the competitor's ability to present his physique with confidence, are assessed. (IFBB 2017c, 3, 10; n.d.; Finnish Fitness Sports Association 2016d.)

The competitors must wear appropriate and clean posing trunks, of which color is not disturbing and which cover at least half of the glutes. Hologram knitted fabrics or otherwise metallic fabrics as well as the use of padding are not allowed. In addition, the competitors are not allowed to wear shoes or any other jewelry except the wedding ring (Finnish Fitness Sports Association 2016d).

In Finland, there are two height-based categories in men's physique: up to and including 178 cm, and over 178 cm. If there are five or less competitors registered in some category, these competitors are then moved to the next height-based category. The international height- and weight-based categories in classic bodybuilding are the followings:

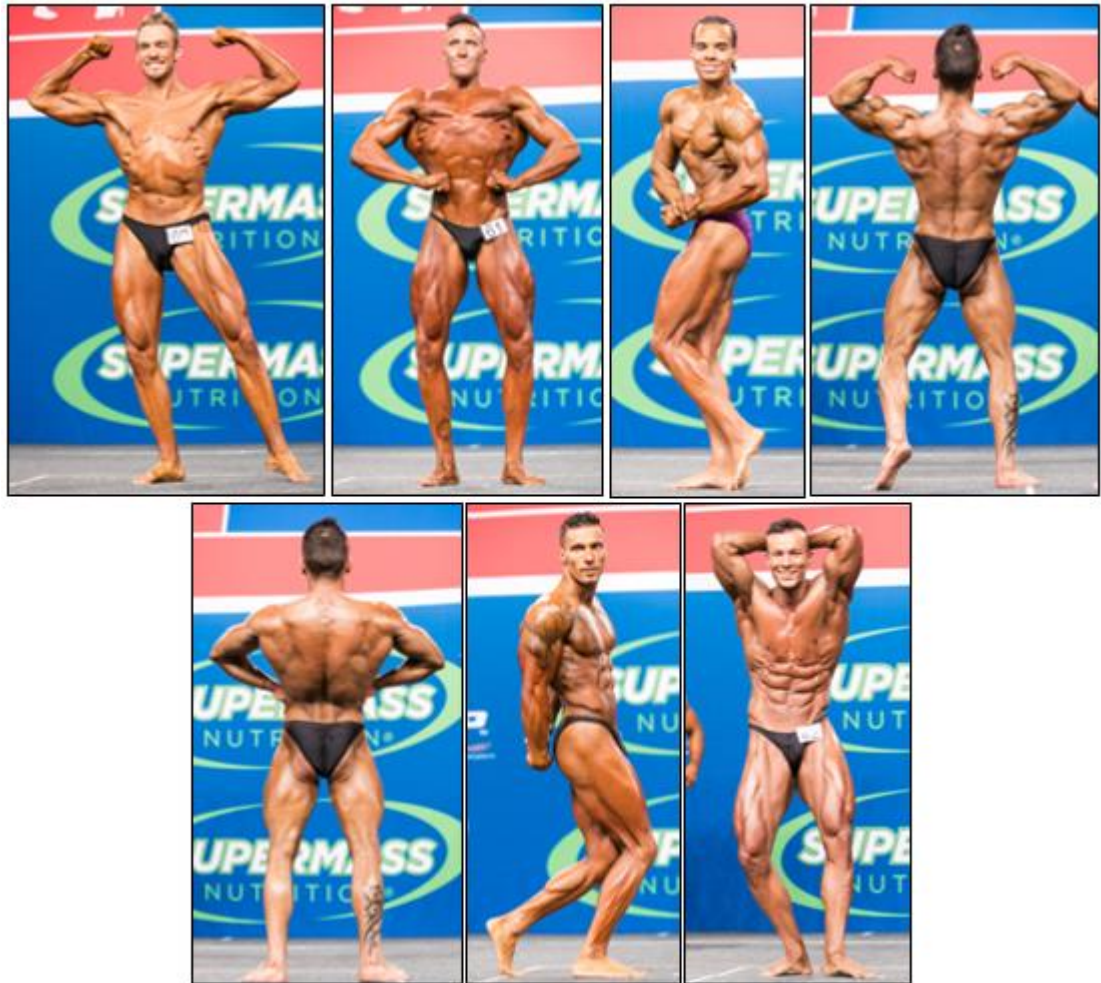
- Up to and including 168 cm (maximum weight: height - 100 + 0 kg)
- Up to and including 171 cm (maximum weight: height - 100 + 2 kg)
- Up to and including 175 cm (maximum weight: height - 100 + 4 kg)
- Up to and including 180 cm (maximum weight: height - 100 + 7 kg)
- 180-190 cm (maximum weight: height - 100 + 9 kg)
- 190-198 cm (maximum weight: height - 100 + 11 kg)
- Over 198 cm (maximum weight: height - 100 + 13 kg)

There are also separate categories for juniors and masters. When it comes to the masters, the competitor can start to compete in this category in the same year when he turns 40. The weight limitations are the same than in the height-based categories. For the juniors' category, in turn, the rules for the competitor's age are the same than in e.g. bikini fitness. There are seven categories based on junior competitors' height and weight:

- Up to and including 168 cm (maximum weight: height - 100 + 0 kg)
- Up to and including 171 cm (maximum weight: height - 100 + 1 kg)
- Up to and including 173 cm (maximum weight: height - 100 + 2 kg)
- Up to and including 180 cm (maximum weight: height - 100 + 3 kg)
- Up to and including 190 cm (maximum weight: height - 100 + 4 kg)
- Up to and including 198 cm (maximum weight: height - 100 + 4,5 kg)
- Over 198 cm (maximum weight: height - 100 + 5 kg)

If there are more than 15 competitors registered to a certain category, there will be a preliminary elimination round, which is done in comparable way than in men's physique, except that the poses done during the quarter-turns are almost the same than in women's body fitness. After the elimination round is the prejudging round, which includes the quarter-turns and mandatory poses. The quarter-turns are the same than in the elimination round, and all the 15 competitors do them at the same time while being lined up in a numerical order. After the quarter-turns, the competitors do the four following mandatory poses in a numerical order and in groups of a maximum of five competitors: Front double biceps, side chest, back double biceps, and abdominals and thighs. The judges will then make requests for comparison for each of the competitors according to which they are then divided into first, second and third comparison groups. In these groups, the competitors perform the seven following mandatory poses: Front double biceps, front lat spread, side chest, back double biceps, back lat spread, side triceps, and abdominals and thighs (see Picture 5.). After the prejudging, each competitor has at least two comparisons; one from the comparisons done in a numerical order, and one from the comparisons done based on the requests for comparison. (Finnish Fitness Sports Association 2016d; IFBB 2017c, 9.)

Six best competitors get to the final round, which begins with the seven mandatory poses mentioned previously. First, the competitors perform the poses while being lined up in a numerical order, after which the chief judge can change the order of the competitors for another comparison if needed. After the mandatory poses, the competitors have a 30-second posedown which is done in comparable way than in women's physique. Then, the competitors exit the stage, and are then called back individually to perform their own posing routines, which should be planned to the music chosen by them, last a maximum of 60 seconds, and include all seven mandatory poses in addition to the freely chosen poses. The requirements and judging criteria for the posing routines are the same than in women's physique. (Finnish Fitness Sports Association 2016d.)



Picture 5. Seven mandatory poses in classic bodybuilding (Finnish Fitness Sports Association 2016d).

2.1.8 Bodybuilding

The modern version of men's bodybuilding was officially recognized by the IFBB already in 1970. In this discipline, the aim is to develop as big muscles as possible and get a very low body fat percentage via dieting and training. However, the most important thing is not the massive size of the muscles, but the muscle definition and density as well as how aesthetical, symmetrical and harmonic the physique in its entirety is. The assessment of the physique is done in the same way than in classic bodybuilding, i.e. the judges pay attention to the same things. (IFBB 2017b, 3, 9; Finnish Fitness Sports Association 2016b.)

The competitors must wear posing trunks which are in good taste, opaque, one-colored and clean. Otherwise the color, fabric and style can be freely chosen by the competitor. The trunks must cover at least $\frac{3}{4}$ of the glutes and the whole front part, and the side of the trunks must be at least 1 cm in width. The use of any kind of paddings and the decoration of the trunks is not allowed. In addition, the competitors are not allowed to wear shoes, watches, eyeglasses, scarfs, jewelry or other artificial aids during the competition. Only wedding ring is allowed. (Finnish Fitness Sports Association 2016b.)

In Finland, there are three weight-based categories in bodybuilding competitions:

- Light-middleweight - up to and including 80 kg
- Middle-heavyweight - up to and including 90 kg
- Heavyweight - over 90 kg

If there are five or less competitors registered in some category, these competitors are then moved to higher weight-based category. There are also two age-based categories for juniors: 18 to 20-year-olds and 21 to 23-year-olds, of which the competitors of the first category are only allowed to compete in every second competition season. There are also three age-based categories for masters: 40, 45 and 50 years. The competitor can start to compete in each of these in the same year when he turns either 40, 45 or 50 years. (Finnish Fitness Sports Association 2016b.)

If there are more than 15 competitors registered to some category, there will be a preliminary elimination round, during which all the competitors enter the stage at the same time in a numerical order, and perform four mandatory poses (front double biceps, side chest, back double biceps, and abdominals and thighs) in groups of a maximum of five competitors. After the elimination round is the prejudging round, during which all 15 competitors enter the stage at the same time in a numerical order and make one big line, after which they perform the same four mandatory poses than in the elimination round in groups of a maximum of five competitors. The judges will then make requests for comparison for each of the competi-

tors according to which they are then divided into first, second and third comparison groups. In these groups, the competitors perform seven mandatory poses which are the same than in classic bodybuilding (see Picture 5.). (Finnish Fitness Sports Association 2016b.)

Six best competitors get to the final round, which begins with seven mandatory poses, of which the competitors perform at the same time while being lined up in a numerical order. The chief judge can then change the order of the competitors for another comparison if needed. Next, the competitors have a 60-second posedown, which is done in the same way than in previously described disciplines (Finnish Fitness Sports Association 2016b).

After the posedown, the competitors enter the stage individually and perform their own posing routines, which should be planned to the music chosen by them, last a maximum of 60 seconds, and contain poses with which the competitor can present all the muscle groups equally. Otherwise there are no certain poses required, and the competitors can choose the poses freely. The judging criteria for the posing routines are the same than in classic bodybuilding and women's physique (Finnish Fitness Sports Association 2016b).

2.2 Strength training in fitness disciplines

Strength training is a form of training in which the length of the sports performance is relatively short, and the resistance used can vary from relatively light to the maximum amount of resistance the person can train with. The goal of strength training can be e.g. to increase the basic strength or maximum strength or gain more muscle mass. The most commonly known form of strength training is gym training, in which the training happens by using e.g. the person's own bodyweight and/or various kinds of gym machines and equipment. There is usually more than one set of repetitions performed per exercise, and the number of repetitions and sets as well as the resistance used are dependent on the person's goals, fitness level and training background.

In fitness disciplines, strength training is one of the key elements when aiming for the competition physique, no matter what the discipline is. Without correctly performed strength training, the competitor will not gain enough muscle mass or get muscles that have a certain shape or separation required in the competition. Especially now when the number of fitness competitors is increasing worldwide, also the competition gets harder and it is getting even more and more challenging to get to the actual competition rounds also on the national level. For that reason, the competitors are putting even more time and effort into strength training in order to reach the physique that will take them to the final round of the competition. Next, strength training and how it is being used in fitness disciplines are described and explained more in detail.

2.2.1 Periodization of strength training by using the linear periodization model

Just like in most competitive sports, the strength training season in fitness disciplines is usually divided in certain macrocycles, mesocycles and microcycles. Macrocycle describes the whole training period, which means usually the whole training year. Mesocycles describe singular training cycles or blocks, which are usually three to six weeks long. Microcycles, in turn describe the structural units (i.e. individual weeks) within mesocycles. From these, mesocycles are used to describe the different training phases in the linear periodization model, which is the most traditional model used. In this model, the training frequency (i.e. how often a certain body part or muscle group is trained), volume (i.e. the total amount of weight used in certain exercise or muscle group, which can be calculated by the number of sets multiplied by the repetitions and weights) and intensity (i.e. how much work is done during every repetition, or more simply the amount of weights used) are systematically modified for each certain mesocycle. Each mesocycle should be built on the progress of the previous mesocycles. (Breaking Muscle n.d.; Wheeler n.d.; Wilson 2011) These mesocycles are described more in detail in the following paragraph discussing about the strength training for a fitness competition.

2.2.2 Strength training for a fitness competition by following the linear periodization model

According to the linear periodization model, the training season can be divided in four phases: 1) General preparatory phase (GPP) of which there can be one or two, 2) special preparatory phase (SPP), 3) competition phase (C), and 4) transition phase (T). The goal of the first GPP is to enhance the general fitness and strengthen the musculoskeletal system, such as the muscles and tendons, to prepare the body and muscles for the upcoming training stress. During the second GPP, the training focuses more on improving the strength characteristics of the muscles, and increasing the strength endurance, which means that the training improves both the strength as well as endurance. During this phase, the volume is usually relatively high (8-12 exercises, 2-4 sets and 10-15 repetitions for each exercise), the breaks between the sets are quite short (30-60 seconds), and the intensity is kept low. This means that the weights used are relatively light, meaning about 40-60% from the person's 1 RM (1 repetition maximum, which is the maximum amount of weights with which a person can only perform one repetition). Training in this phase is called anaerobic strength training due to the lactic acid accumulation in the muscles caused by the anaerobic energy production in the muscle cells. (Breaking Muscle n.d.; Wilson 2011; Kotkansalo 2015, 58; Aalto, Seppänen, Lindberg & Rinta 2014, 79.)

During the SPP, training must be well-planned, long-term and unconditional to reach the desired results. The training plan must be divided so that there are always certain muscle groups trained on a certain day, and the total amount of training session per week is 3 to 6 sessions. The SPP focuses first on developing the basic strength, which improves the general ability of the muscle to be trained and increases the cross-sectional area of the muscles while simultaneously increasing also e.g. the maximum strength. This type of training can be called neuromuscular hypertrophy training. During this phase, the weights used are quite heavy (about 70-90% from the person's 1 RM), number of repetitions for each exercise is from 4-8, the number of sets per muscle group should be from 6-15, and the rest between sets is 2-4 minutes. However, e.g. in some of the women's disciplines this

type if training is not necessarily required because of their requirement for lighter physique and the fact that maximum strength is not needed in these disciplines. (Kotkansalo 2015, 59; Aalto et al. 2014, 79-80.) However, this kind of training builds a good foundation for the training in the second part of the SPP (M. Hämäläinen, personal communication, May 20, 2018).

Next, the training is focused on muscle-building which lasts for about 12 to 16 or even up to 28 weeks. The muscle groups should be first fatigued to an extreme exhaustion with some basic exercises, after which more targeted, isolated exercises are used, again until the extreme exhaustion. As a result, blood gets built up in the muscles and the cell membranes and fasciae get swollen. This swolleness is called pump, which is needed for the muscles to growth, in addition to the micro-damages that occur in the muscle cells because of the slow and eccentric muscle contraction performed with such heavy weights that the last repetitions are extremely hard to do. During this phase, the volume is slightly lower than during the GPP (3-6 training sessions per week, 6-15 sets for each muscle group, 6-12 repetitions per exercise), the breaks between sets should be relatively long (1-3 minutes), and the intensity should be higher than during GPP but slightly lower than during the beginning of SPP (60-80% from the person's 1 RM). (Aalto et al. 2014, 79; Kotkansalo 2015, 59.)

Next is the competition phase (C), which lasts for about 15 to 20 weeks depending on the individual (Kotkansalo 2015, 59). During this phase, the main goal is to lower the body fat percentage to the optimal level for the competition in addition to maintaining and possibly still increasing the muscle mass achieved during the previous phases as well as developing certain shapes to the muscles. To lower the body fat percentage, the amount of aerobic exercise, which will be discussed later in this report, is gradually increased during this phase in addition to starting the competition diet, which is discussed in the same chapter than aerobic exercise. The beginning of C phase is very similar when compared to the second phase of SPP. However, there is usually a slight decrease in volume about half way through the C phase (about 3-5 training sessions per week, 2-4 sets and 10-15 repetitions per exercise) in addition to a decrease in the intensity (about 40-60% from the person's 1 RM), with the rest periods between sets being relatively short (1-2

minutes). This is because when the amount of aerobic exercise increases, and the daily caloric intake decreases, there is not enough energy for the muscles to train with maximum volume and intensity also at the gym (Kotkansalo 2015, 162; M. Hämäläinen, personal communication, May 20, 2018).

The last phase in linear periodization model is the T phase, during which the body and the muscles are given an opportunity to recover from the training and dieting stress. During this phase in fitness disciplines, there is usually also the competition. Usually, about a week before the competition, aerobic exercise is left out because during the last week before the competition, training should not cause lactic acid accumulation to the muscles since this has a negative impact on the muscle separation. For this reason, also the strength training is a lot lighter than during the previous phases, meaning that there are more sets (5-6), they are longer (10-15 repetitions), and the weights used are lighter (about 40-60% or less from 1 RM) (Kotkansalo 2015, 164; M. Hämäläinen, personal communication, May 20, 2018). After the competition, there might not be strength or aerobic training at all, but if there is some sort of training, that usually includes only some light exercise which helps the body and the muscles to recover, such as light walking or jogging.

2.3 Fitness competitor's nutrition

Fitness competitors should eat about five to eight times a day, meaning in every two to three hours, to maintain a normal metabolism, avoid potential problems with the stomach, stay energized and keep the ability of the body and the muscles to function on the optimal level. On the days when there is one or even more training sessions, there should be up to eight meals per day, when on rest days the number of meals should be about five or six because on those days there is no need for pre- and post-workout meals. During the off-season, the daily caloric intake for female competitors should be about 2000-3000 kilocalories or more depending on the person and the discipline, and even up to 3000-4000 or 4000-5000 for men, again depending on the person and the discipline. The more and harder the person trains and the more muscle mass she/he needs to build, the more they must usually also eat. However, during the competition season, the caloric intake should be

lower than during the off-season especially at the end of the competition season to reach the desired leanness for the competition. (Kotkansalo 2015, 128; Stoppani 2017; Helms, Aragon & Fitschen 2014.) However, the decrease in caloric intake should happen gradually rather than suddenly because otherwise the body will almost immediately go into “starvation mode” which causes a decrease in your metabolic rate. This is because the body tries to conserve its energy stores, i.e. the body fat, which then makes it extremely challenging for a person to lose body fat (Stoppani n.d.). This topic will be discussed more later in this report in a chapter focusing particularly on competition diet.

Next, the different macronutrients, including proteins, carbohydrates and fats, as well as their intake for a fitness competitor are described. Also, some of the most common additional supplements used by fitness competitors are described.

2.3.1 Proteins and their intake for a fitness competitor

Since the proteins are necessary in several biochemical reactions, make up about 50 percent of the dry weight of the cells and there are about 10-12 kilos of protein in the human body, we can say that proteins are extremely important part of the diet, especially when the goal is to increase and maintain the muscle mass since proteins are needed to build muscles. The body can produce some of the amino acids of which the proteins are made of by itself, but most of them it cannot produce. For this reason, it is important to have a versatile diet so that the body gets all the essential amino acids it cannot produce by itself. However, just like with all the other nutrients, the proteins should not be consumed too much either since the body can store the excessive protein as fat, and it can also cause e.g. problems with the water balance of the body. (Kotkansalo 2015, 129-130.)

It is important to pay attention to the quality of the proteins consumed. It is recommended to favor e.g. milk products, eggs, white meat, red meat and legumes, but especially the animal proteins are recommended since the composition of essential amino acids in those is close to the composition of essential amino acids that humans need. The plants usually have only a little of some of the essential amino

acids, and some of them they might not have at all. These amino acids are called limiting amino acids. In some cases, it is also recommended to use protein supplements, such as protein bars and powders, to meet the daily requirements for protein intake. (Kotkansalo 2015, 130.)

The need of protein varies between individuals. According to some studies conducted in the field, about 30 grams of protein consumed during each meal is optimal for a professional athlete, when a normal person needs only 15-20 grams per meal. The daily need for protein can be also calculated based on the person's weight and activity level. More sedentary people might need protein for only 0,8 grams per kilogram (g/kg) body weight (BW) per day, when the need of protein for professional athletes can be 1,5-2,5 g/kg BW per day, which makes up 15-20% of the total daily energy intake. It is recommended to increase the proteins' part of the daily energy intake to 20% or even higher when the goal is to lose weight or the person gets less energy for some other reason, such as that he/she is competing in some fitness discipline with weight-based categories. (Kotkansalo 2015, 129-130.) For example, according to Helms et al. (2014), it is recommended for a body-builder to consume proteins about 2,3-3,1 g/kg of lean body mass, which is slightly higher than previously mentioned recommendation. In addition, it is essential to consume protein with an adequate amount of energy, meaning at least 500 kcal per meal, so that the muscles can fully benefit from the protein consumed. The proteins themselves have the energy density of 4 kcal/g (Kotkansalo 2015, 129).

If the athlete's energy intake is lower than energy expenditure, the use of body's own functional and structural proteins as energy increases. At least in endurance sports, if the exercise intensity and frequency increase, also the use of protein as energy source increases. In endurance sports, the need of protein can increase up to 50-75% (0,8 g/kg BW -> 1,2-1,4 g/kg BW) when compared to sedentary person. When it comes to strength athletes, the need of protein can increase even more than 100% (0,8 g/kg BW -> 1,6-1,8 g/kg BW), not because of the increased use of protein as energy source, but because of the increase in protein synthesis and for the maintenance of bigger muscle mass. The need of proteins increases especially in the beginning of strength training because of the muscle damages

that require protein to be repaired. (Sundqvist 2014, as cited in Kotkansalo 2015, 131.)

What also matters in addition to the correct amount of proteins consumed, is the correct timing. Protein should be consumed in appropriate amounts at regular intervals along the day. However, it is important to consume enough protein especially immediately before and after the workouts, since even though the protein synthesis is increased after the workout, the protein breakdown is also increased both during and after the workout. In fact, for a brief period just after the workout, the rate of breakdown is even higher than the rate of protein synthesis. For this reason, adequate intake of protein immediately before and especially after the workout is needed to offset catabolism. (Kotkansalo 2015, 131; Andrews 2008.)

Even though there has been a common belief that cardio on an empty stomach especially in the morning is the most effective way to burn fat, research has shown that it is better to consume some amino acids before cardio. This is because taking e.g. a half scoop to full scoop of whey protein just before cardio will enhance the fat-burning (Robertson n.d.). Consuming high-protein meals in general also aids in fat burning, since there have been some researches in which people have experienced a 20% increase in their energy expenditure after consuming a high protein meal (Stoppani 2018).

Moreover, there has been studies indicating that increasing your protein intake will lead to greater fat-loss. In a study conducted by Antonio (2016, as cited in Stoppani 2018), there were two test groups, both following an 8-week training program, and from which the other group followed a diet including 1 gram of protein per pound of bodyweight a day and the other one 1,5 grams of protein per pound of bodyweight a day. Naturally, the group that followed the diet with more protein also consumed about 500 calories more per day than the other group. At the end of the study, subjects from both groups gained around the same amount of muscle mass (about 3 pounds). However, the group that consumed more protein lost an average of 5 pounds of bodyfat when there was no significant fat loss in the other group. So, a group consuming 50% more protein and 500 calories more per day lost fat more efficiently.

Even though proteins are essential for muscle growth and development, they should not be emphasized to the detriment of carbohydrates, since also those are very essential for effective training. This is because carbohydrates are the main source of energy for the muscle cells in strength training, and they are also needed for the muscles to recover and use the protein consumed more efficiently. Moreover, inadequate carbohydrate intake leads to an increasing breakdown of proteins. (Kotkansalo 2015, 130-131).

2.3.2 Carbohydrates and their intake for a fitness competitor

Simply put, carbohydrates are various kinds of sugars, that can be divided in monosaccharides, disaccharides and polysaccharides based on their structure. From these, monosaccharides, such as fructose and glucose, are composed of one sugar molecule, and they can be gotten from e.g. fruits and berries. Disaccharides are made of two different sugar molecules, and include e.g. lactose, which can be gotten from milk products. Polysaccharides, in turn, are made of 10 to even up to several thousand monosaccharides, and they include starch, cellulose and glycogen, which are the most common polysaccharides humans get from their nutrition. From these, starch and cellulose are gotten from plants. Starch acts as an energy source, and cellulose as a dietary fiber. Glycogen, in turn, is the form in which glucose is stored in the human liver and muscles. (Kotkansalo 2015, 133; Nutrients Review n.d.)

Starch is quantitatively the most important absorbing carbohydrate for us. It increases the blood sugar levels remarkably slower than smaller saccharides, due to the vast number of digestive enzymes that are needed for its digestion. The glycemic index, which describes how fast and how much carbohydrates raise the blood glucose levels, is very high for pure starch. However, distinctive features of the food, such as the fibers, its composition and fat content, slow the digestion of the starch down (Kotkansalo 2015, 133).

It is recommended to favor different slow digesting carbohydrates on most of the meals, since they keep the blood sugar levels more stable during the day as well as during the training sessions. Research has also shown that athletes who consume slow carbohydrates burn fat more efficiently, and when enough carbohydrates are consumed especially in the morning together with suitable amount of protein, the body is less likely to stimulate fat storage. The carbohydrates consumed on breakfast should be mainly slow (about 20-30 g) (Robertson n.d.).

Most of the carbohydrates should be consumed in the beginning of the day, since they are the most readily available energy source, and the body uses them as the primarily source of energy on that time of the day. Later in the day, in turn, the body needs less energy from carbohydrates, and the insulin sensitivity reduces, meaning that more insulin is required to get carbohydrates into the muscle cells, which causes a greater risk of generating bodyfat storage. To avoid this, it is recommended to decrease the intake of carbohydrates as the day progresses (Robertson n.d.).

The main purpose of carbohydrates, which have the energy density of 4 kcal/g, is to work as an energy source for the muscles, and they should make up about half of the daily energy intake, which is about 4-7 g/kg BW for strength athletes. The most likely reason for fatigue during a training session is that the glycogen storages in the muscles have gotten empty. When there is not enough energy available for the muscles, the level of performance decreases and training does not lead to the desired results. However, fatigue during the training session can be avoided by consuming drinks that have high carbohydrate content during the training session. In addition, it is recommended to consume about 20-30 grams of carbohydrates (with about 20-25 grams of protein) before and about 1g of carbohydrates per kilogram (with at least 20 grams of fast-digesting protein) after the training session, because when consumed before the training session, they enhance the recovery of the muscles and prevent fatigue during the training session. When they are consumed immediately after the training session, they increase the insulin secretion which in turn leads to an anabolic state, also known as the muscle building state, in the body, while simultaneously fending off cortisol which reduces the protein synthesis. The carbohydrates consumed before the training session should

be slowly-digesting since those will not increase the insulin levels that much and for that reason will not interfere with fat-burning while training. The carbohydrates consumed after the training session should be fast-digesting since those are not likely to be stored as fat because they are needed to refill depleted glycogen storages. (Aalto et al. 2014, 300-308; Kotkansalo 2015, 133; Robertson n.d.)

Moreover, avoiding carbohydrates before cardio will make the cardio burn more fat since cardio burns both carbohydrates as well as fats, and the less carbohydrates and cholesterol there are in the bloodstream, the more fat cardio will burn. However, like it was already mentioned, cardio should not be done on an empty stomach, even though it has been very popular way to do cardio among fitness enthusiasts and professionals. Moreover, consuming about 20-30 grams of fast digesting carbohydrates also after the cardio session in addition to some protein is recommended, since they will refill the glycogen storages, increase insulin secretion, and help in getting more recovery aiding nutrients to the damaged muscles. (Robertson n.d.)

One popular method being used among strength athletes especially in these days, is so called cheat days, of which the athlete can have once a week, and on which the intake of carbohydrates can be increased above the normal level. Increasing the intake will help in maintaining the leptin levels and increases the release of thyroid hormones, both of which are likely to decrease notably when the intake of carbohydrates is low for a prolonged period. Keeping the leptin levels and secretion of thyroid hormones up will ensure that the body burns fat more efficiently (Robertson n.d.).

The best sources of carbohydrates include e.g. rice, porridge, pasta, bread, potato, fruits, vegetables and berries as well as maltodextrin, glucose and dextrose from additional supplements. The energy should come mainly from the normal food, and only a small amount of it should come from the additional supplements. Especially, if the need of energy is very high, just like it often is for professional athletes and goal-oriented trainers, and it is impossible to get all the energy from nor-

mal food, it is recommended to use additional supplements to guarantee appropriate energy intake and enough energy for the muscles to grow (Kotkansalo 2015, 134).

2.3.3 Fats and their intake for a fitness competitor

Even though the fitness competitor's fat percentage should be very low by the competition phase, there are certain kinds of fats that should still be included in the diet since they are very essential for several functions in the body. However, even those fats that are essential for certain body functions should be consumed moderately since fats are very rich in energy (energy density of 9 kcal/g) and can lead to a weight gain and increase of the fat tissue in the body when consumed too much, which is also the case with all the other nutrients. (Kotkansalo 2015, 134).

There are four types of major dietary fats: Saturated fats, trans fats, monounsaturated fats, and polyunsaturated fats. These different fats have different chemical and physical properties, which determine if they are good or bad fats. The different properties are related to the different forms of triglycerides which consist of glycerol and three fatty acids attached to it. The properties of these fatty acids determine the properties of different fats. From these four types, saturated and trans fats are the bad fats. They are usually more solid at room temperature and can be found e.g. from some dairy products (such as butter and cheese), animal meat, processed meats (such as sausages and bacon), pre-packed snacks, and some certain plant oils (such as coconut oil). Unsaturated fats (i.e. good fats), in turn, are usually more liquid, and can be found e.g. from vegetable oils, olives, avocados and certain fish (e.g. salmon and tuna). (Kotkansalo 2015, 134-135; Moll 2018).

There are also a few essential unsaturated fatty acids worth mentioning: linoleic acid and alpha linolenic acid, also known as omega-6 and omega-3 fatty acids, both of which need to be consumed via diet since the body is not able to produce them by itself. However, people tend to get omega-6 even too much since it can

be found from several popular foods of these days, including vegetable oil, fast foods, dairy products, eggs, chicken, pork and baked foods such as cookies and bread. Consuming omega-6 too much can have a negative impact on the balance of omega-3 and omega-6 in the body, since it can prevent the absorption of omega-3 fatty acids while simultaneously increasing the inflammation which can have several negative health effects. Omega-3, in turn, can be gotten from fish, olive oil, garlic, and walnuts, and it reduces inflammation which in turn lowers the risk of getting e.g. osteoporosis, cancer, heart disease, and asthma. (Möller 2017; BrainMD Life 2016).

As it was already mentioned, fats are essential for several functions in the body. There are several important fat-soluble vitamins that come from fats, including vitamin A, D, E and K. Moreover, fats are essential in forming the cell membranes, and they work as an important energy source for the muscles. They work as structural units of the cells and are included in the functioning of the nervous system, hormone metabolism, and growth. They also help in protecting the organs, absorbing some nutrients, monitoring the cholesterol levels, and keeping the body warm. (Kotkansalo 2015, 134; American Heart Association 2014.)

Fats should make up about 25-35% of the athlete's daily energy intake. From this 25-35%, the amount of saturated fats should be a maximum of 10%. If the goal is weight loss or to lose fat, a fat intake of 0,5-1,0 g/kg BW is recommended. Fats should be gotten from various sources, such as fish, different nuts and seeds, olive oil, canola oil, organic butter, cold-pressed coconut oil, and eggs. In addition, it is also recommended to favor low-fat and/or fat-free dairy products and low-fat meat. (Rodriguez, DiMarco & Langley 2009, as cited in Potgieter 2013, 13; Kreider, Wilborn, Taylor et al. 2010, as cited in Potgieter 2013, 13; Aalto et al. 2014, 303).

2.4 Additional supplements and their recommendations for a fitness competitor

In addition to normal healthy diet, the fitness competitors might also need some additional supplements that e.g. aid the recovery of the muscles, help to maintain the energy levels during the workouts, guarantee that the competitors get all the

essential nutrients if their diets are very limited for some reason etc. Not everyone needs to use all the possible supplements to reach the best possible results, but everyone should use those supplements that support their own personal goals best. Next, some of the most commonly used supplements among strength athletes are described.

2.4.1 Protein powders

Especially whey protein is a very good source of protein, since it has the right amount of some of the essential amino acids, a lot of glutamine and branched-chain amino acids which are described later, and it also absorbs quickly. Since it is very high quality and quickly absorbing protein, it is recommended to be consumed immediately after the training session to start the preparing process of the damaged muscles and fix the hormonal imbalance (Aalto et al. 2014, 310).

In addition to whey protein, there are also soy, milk and egg protein powders, and different mixtures on these and the whey protein, but the amino acid content of these is not as good as in whey protein. Also, the rate of absorption in these is not as fast as in whey protein, but this can be actually very beneficial in some cases, since when the amino acids are absorbed for a longer period, they simultaneously maintain the anabolic state in the body longer. The most beneficial time to consume this kind of protein powders is just before going to sleep, since the muscle cells grow mainly during rest. Also, protein in snacks consumed during the day should be mainly slowly-absorbing. Protein powders can be mixed with water or e.g. with milk or juice, and they can be also mixed into porridge and smoothies. (Aalto et al. 2014, 310; Kotkansalo 2015, 140).

2.4.2 Branched-chain amino acid supplements (BCAA)

BCAA supplements include three essential branched-chain amino acids called valine, leucine and isoleucine, of which valine should be consumed about 250 mg, leucine 1000 mg, and isoleucine 250 mg per day. What makes these amino acids

different when compared to other essential amino acids, is that instead of the liver they can be utilized as energy straight in the muscles. This kind of energy-production occurs especially during long-lasting exercises or competitions, because the first amino acids used as energy in this type of exercises are the branched-chain amino acids (Aalto et al. 2014, 310-311).

Consuming BCAA supplements either before, during or after long-lasting exercise is very important to keep the amino acids in the body balanced, because otherwise all the proteins left in the body can not be completely utilized. They might also affect the secretion of growth hormone as well as those proteins in the body that bond it (Aalto et al. 2014, 311).

2.4.3 Glutamine

Glutamine is a non-essential amino acid, which is the most common amino acid in the muscles (50-60%) and for that reason also very important for them and their ability to function. When the muscles are trained hard, the occurring damages and inflammation state are fixed e.g. by releasing glutamine from the muscles for the immune system's needs. If the immune system needs more glutamine for fixing the damages than normally, such as when the athlete is overtrained, the release of glutamine might get so big that the athlete starts to lose his muscle mass (Aalto et al. 2014, 311).

Glutamine supplements get absorbed to the muscles very well especially after the training session. They simultaneously transport water into the muscle cells and increase the pressure in them, which is believed to cause an anabolic signal to the muscle cells. It also increases the secretion of growth hormone and bicarbonate which can neutralize the lactic acid accumulated to the muscles during exercise (Aalto et al. 2014, 312).

In addition to just after the training session, an appropriate time to take glutamine is also before going to sleep. Enough intake of glutamine to reach positive impacts is 2-5 grams per day (Aalto et al. 2014, 312).

2.4.4 Arginine

Arginine has a positive impact on nitric oxide which is responsible for expanding the blood vessels and that way increases the blood flow to the muscles. For this reason, about 3-5 grams of L-arginine can be used about an hour before the training session to increase the blood flow to the muscles and cause blood accumulation (i.e. pump) in them. The greater the pump, the more nutrients get there and the greater the anabolic pressure there occurs, leading to an increased muscle growth. In addition, arginine also increases the growth hormone secretion especially when it is consumed just before going to sleep. 3-5 grams of arginine is also suitable amount for this purpose. (Aalto et al. 2014, 312.)

2.4.5 Diet products and meal replacements

These supplements include products that have all the most important nutrients but not any unnecessary fat or energy. They are most commonly used to replace one or two normal meals a day, and usually the goal of this is to lose weight. However, they are also good in those situations where there is no other food available for some reason. These kinds of products usually include a lot of protein (25-40 grams per portion), less or as much carbohydrates, quite a lot of vitamins and minerals, very little fat, and usually also some fiber. (Aalto et al. 2014, 312-313.)

2.4.6 Weight gain and recovery supplements

In addition to being for people who have troubles in eating enough to increase their body weight and muscle mass, the weight gain supplements can also be used for recovery. These and recovery supplements can be used after exercise even by those athletes who are on a diet without having to worry about gaining weight. When consumed after exercise, the protein in these supplements should be as high quality as possible and fast-absorbing to prevent catabolism, such as whey protein (Aalto et al. 2014, 313).

The correct composition of these supplements is dependent on the athlete's needs and desired outcomes. If the person's metabolism is very fast, meaning that it is also very hard for them to gain weight and muscle mass, the supplement should include a lot of carbohydrates, such as 80% of carbohydrates in addition to 20% of protein. If the goal is to increase or maintain the muscle mass without increasing the body's fat percentage, there should be 60-70% of carbohydrates and 30-40% of protein. When the goal is to decrease body fat, there should be a maximum of 50% of carbohydrates. (Aalto et al. 2014, 313.)

About 90% of the carbohydrates in these kinds of supplements should consist of glucose polymers, meaning either maltodextrin, starch syrup, rice syrup or some other long-chained carbohydrates. The last 10% should consist of fructose since that refills the liver's glycogen storages best (Aalto et al. 2014, 313).

2.4.7 Fish oil

Fish oil includes omega-3 fatty acids which were already discussed earlier. Omega-3 includes eicosapentaenoic acids (EPA) and docosahexaenoic acid (DHA), both of which have several effects on the body's metabolism as well as its recovery and growth mechanisms. For example, it increases the production of anabolic prostaglandin E1 8 (which then increases the secretion of growth hormone), decreases the production of catabolic prostaglandin E2 and catabolic interleukin IL-1, improves the insulin sensitivity, expands the blood vessels, and improves the blood circulation and red blood cells' ability to transfer oxygen (Aalto et al. 2014, 314).

Even though fish oil is fat, it still has properties that help to decrease the body fat. This is because e.g. the improved insulin sensitivity decreases the storing of the fat, fat burns more efficiently as the growth hormone secretion increases, and the utilization of fats as an energy source increases when the body's oxygen uptake increases (Aalto et al. 2014, 314).

Enough fish oil can be also gotten from 100-150 grams of salmon per day, but when it comes to fish oil as a supplement, the amount is dependent on its EPA and DHA content. If the content is 35%, the suitable amount to be consumed is 5-10 grams per day, but if the content is less, the portion can be also increased (Aalto et al. 2014, 314).

2.4.8 Vitamins and minerals

Vitamins and minerals are extremely important for humans, and even the smallest lack of them can increase the risk of different illnesses as well as the decrease in the level of performance. The most common way to take care of the enough vitamin and mineral intake is to use multivitamin supplements. When used by the instructions, the minimum daily requirement for all the most important vitamins and minerals is fulfilled (Aalto et al. 2014, 315).

Some examples of the essential vitamins and minerals include e.g. calcium, vitamin E, chrome, zinc, and creatine. Calcium is very essential for the bones as well as the for the contraction of the muscles. Vitamin E is one of the essential antioxidants, meaning substances which can prevent the formation of free radicals in the body during oxidation, simultaneously decreasing the risk of several illnesses. In addition to that, Vitamin E also prevents the muscle cells from getting damaged during exercise and destroyed during catabolism. Chrome is essential mineral for improving the insulin sensitivity and that way also the refilling process of the liver and muscles' glycogen storages. Zinc is needed in optimizing the production of testosterone, which is a very important hormone for improving the sports performances. Creatine, in turn, is the most beneficial for those athletes who need maximal anaerobic performance, meaning e.g. powerlifters, bodybuilders and other strength athletes. It has anticatabolic impact which reduces the recovery time, and it also increases the volume of the muscle cells, simultaneously increasing the pressure within them and leads to an anabolic signal. It increases the ability to train hard, which leads to an increase in strength and muscle mass. (Aalto et al. 2014, 315-319.)

The most natural and cost-effective way to use creatine is to take it only in those days when there is a training session. It should be taken 3-5 grams at a time, at least three times per week, without the need of having to keep a break from using it at some point, when in a few other methods there is a need for a break because in those the effect of creatine decreases over time and the body's own creatine-producing mechanisms need to be activated again. However, in the method where there is no need for breaks, reaching the enough level of creatine takes a long time (Aalto et al. 2014, 319).

2.5 Aerobic exercise and competition diet during the competition phase

When it comes to training, the importance of aerobic exercise, which is also called cardio, is emphasized during the competition phase since one of the main goals during this phase is to decrease the competitor's body fat percentage to the optimal level for the competition. In aerobic exercise, fats are the main source of energy for the muscle cells, which is why aerobic exercise burns fat more efficiently than strength training, in which the main source of energy is the carbohydrates.

In addition to aerobic exercise, especially the diet plays a significant role in fat-loss. This is because training alone does not burn that much fat that the optimal body fat percentage would be achieved just by training. In addition, if aerobic exercise is performed too frequently or the diet does not provide enough nutrients for the muscles to develop, recover and function properly (i.e. the energy intake is lower than energy expenditure), it can lead to a notable loss of muscle mass, shape and size as well as to a decreased level of performance, all of which are very undesirable outcomes (Kotkansalo 2015, 128). For this reason, diet plays a significant role in competition preparation, since by keeping the intake of proteins, carbohydrates and fats on an optimal level also during the competition phase, the loss of muscle mass will not be remarkable, but the body fat percentage will still decrease to the optimal level when there is also a proper amount of aerobic exercise performed. It is also important to keep the competition diet versatile to get all the essential nutrients and avoid nutrient deficiency (Kotkansalo 2015, 128).

The competition diet should start about 20 weeks before the competition itself. When it comes to the diet, it is recommended to start by first eliminating all unnecessary food stuffs from the diet, such as sweet treats and other unnecessary snacks, before starting to change the diet more specifically. Depending on the individual, the weight should start to decrease already during the first two to three weeks just by doing this (Kotkansalo 2015, 154).

About three to four weeks after starting the diet, the daily caloric intake should be about 2000-3000 kcal for females and 3000-4000 kcal for males, again depending on the discipline and the individual (Kotkansalo 2015, 158-161). In addition, there should be about three 30-minute low-intensity aerobic workout sessions, such as brisk walking or indoor cycling, included in those days of the week when there is no strength training. In other words, at this point of the diet there should be about four gym training sessions included in a week in addition to three aerobic exercise sessions, all of them performed on separate days. Again, depending on the individual, the weight should decrease for the next few weeks when doing this (Kotkansalo 2015, 154).

Starting approximately on the sixth week, the athlete can start to decrease the dry weight of carbohydrates, such as bread, rice or pasta, during each meal by 10 grams, in addition to leaving e.g. three fruits out from the daily meals (Kotkansalo 2015, 154). However, for example the carbohydrates consumed post-workout should not be decreased yet because of their significant importance for the muscle growth and recovery (Stoppani n.d.).

The reason why the amount of carbohydrates is decreased, is because when the caloric intake is reduced, the body goes into “starvation mode” while simultaneously decreasing the metabolic rate and the body’s ability to burn fat, which was already mentioned earlier in this report. To continue to lose fat and still maintain and possibly also increase the muscle mass, it is recommended to keep the protein and fat intake on the current level and decrease the carbohydrate intake, since there are no essential carbohydrates that the body needs, and it can produce all the glucose needed also from protein and fat (Stoppani n.d.; 2017).

However, an important thing to remember is that if the weight is decreasing in the desired manner, there is no need to change the diet or the amount of aerobic exercise. If the weight does not change during five to six days, then there is a need to change either only the diet or exercise but not both. This is because otherwise two effective ways to lose body fat are used simultaneously for nothing. Moreover, it is also possible to make only temporary changes in the diet to aid the weight loss. For example, once a week the athlete could leave the carbohydrates out from all the meals after lunch, which is an effective way to increase the use of fat as an energy source during exercise. If there are problems with the stomach, it is e.g. possible to completely leave the proteins out for one day, which will then reduce the stress occurring in the intestines. However, the problems with the stomach can be also avoided by consuming enough water, fiber and a lot of salads since the amount of those consumed is not limited even during the diet. (Kotkansalo 2015, 154-155.)

According to Kotkansalo (2015, 154), if the weight has stopped decreasing on week 7, the amount of protein can be then dropped down to approximately 25 grams per meal. However, according to Stoppani (2017), it would still be better to reduce the daily intake of carbohydrates e.g. by 0,5 g/kg BW. It is important to remember that people are different, and some people benefit more from the decrease in proteins when the others might benefit more from the gradual decrease in their carbohydrate intake.

If the weight has not changed by week 8, the athlete can include low-intensity aerobic exercise four times a week in bouts of 30 minutes either in the morning or after the strength training session in addition to the other three aerobic exercise sessions included in the training week. According to Kotkansalo (2015, 154), the morning aerobic should be done on an empty stomach, but as it was already mentioned, there has been researches indicating that it is better to consume some amino acids before that since this will enhance the fat-burning (Robertson n.d.). However, this is again dependent on the individual, and doing morning aerobic on an empty stomach might work better for some people than taking e.g. some whey protein before that, when the other person might benefit more from consuming the amino acids.

The morning aerobics should be started in week 9 or 10 by the latest, and they should be done four times a week in bouts of 30 minutes on those days when there is no strength training and especially leg workouts. On these weeks it is also possible to include one cheat day to the athlete's diet, since this will effectively refill the muscles' glycogen storages while simultaneously providing more energy for training. These cheat days will temporarily increase the athlete's weight, but it should decrease below the level at which it was before the cheat day in a few days. When these cheat days are included in the diet, the athlete should decrease the amount of carbohydrates by 10 grams during each meal on those days other than cheat days. (Kotkansalo 2015, 155.)

On week 12 or 13, the athlete can start to perform a low-intensity 30-minute morning aerobic in either every morning or in six days a week, which will again help in losing weight for the next few weeks, after which the time for morning aerobic is increased to 45 minutes if the weight has not decreased or the body gotten leaner. The carbohydrate intake is also usually decreased at this point so that the dry weight of these during each meal is about 20-30 grams. This is the lowest amount to which the carbohydrates during each meal are usually decreased on competition diet. However, carbohydrates can be completely left out from the evening snack to lower the energy levels even more if there is a need for it. (Kotkansalo 2015, 155.)

About four weeks prior the competition, the aerobic exercise should be performed in six to seven mornings in bouts of 45-60 minutes, in addition to about four strength training sessions per week combined with 30 minutes of aerobic exercise, and about seven 30-40-minute aerobic training sessions performed on those days when there is no strength training. In other words, the amount of aerobic exercise performed per week at this point of the competition diet can be extremely high. However, the amount of it needed is again dependent on the individual. Some athletes keep their body fat percentage so low throughout their training year that they do not need that much aerobic exercise at the end of their competition season. Some other athletes, in turn, prefer not to focus on aerobic exercise at all

during their off-season, and have for that reason more fat to lose during their competition season. (Kotkansalo 2015, 155; M. Hämäläinen, personal communication, May 10, 2018.)

Like it was already mentioned, there can be some light strength and aerobic training sessions also during the competition week, but they should be so light that there is not any remarkable lactic acid accumulation in the muscles since this will negatively affect the muscle separation. In addition, also the caloric intake is usually so restricted at this point of the diet (approximately 1000-1500 kcal or even less than 1000 kcal per day) that there is not even that much energy left for training. For example, a few weeks before the competition the carbohydrate intake might be decreased so remarkably that there are only one or two meals a day during which the athlete can eat carbohydrates (Kotkansalo 2015, 165; M. Hämäläinen, personal communication, May 20, 2018).

At the very end of the competition preparation when there are either only a few days or some hours left before the competition, many athletes also engage in some sort of fluid, electrolyte, and/or carbohydrate manipulation to reduce extracellular water content in their body and that way enhance their muscle size and definition. However, the health impacts of these methods are not researched, and since they might lead to dehydration and electrolyte imbalance in the body, they might be quite dangerous (Helms et al. 2014).

As it can be seen, the caloric intake is gradually decreased, and aerobic exercise increased throughout the competition diet. The reason why the caloric intake is decreased gradually over a longer period is because this way the loss of muscle mass will be smaller than if the caloric intake was decreased faster. A suitable rate for weight loss is approximately 0,5 kilos per week, since this way the lost weight is more likely to be fat instead of muscle (Helms et al. 2014).

3 WORKING METHODS USED WHEN PLANNING AND IMPLEMENTING THE COURSE AS A SERVICE PRODUCT

In the beginning of the thesis process, it was unclear what kind of frameworks and methods would be used when planning the course. On the other hand, the course is a product but then on the other hand it is also a service, and if the course was going to be planned, organized and implemented as a service product, also people from the target group of the course had to be involved in the planning process somehow. Eventually, two suitable and quite similar frameworks about product and service development were found, and the author decided to apply them both when planning the course. In addition, both quantitative as well as qualitative research methods were decided to be used as a part of the planning process in order to include also the potential customers to the planning and development process. The following chapters discuss the two chosen frameworks as well as the quantitative and qualitative research methods more in detail.

3.1 The new product development and new service development frameworks

Since the course is a service product, the new product development (NPD) framework as well as the new service development (NSD) framework were used when planning the course, and they will also be used when organizing and implementing it. According to Shekar (2007, 5) and Rouse (2014), there are eight steps included in both frameworks, and as it can be seen from Table 1, the steps in both frameworks are quite similar when compared to each other. However, there are also some notable differences when it comes to e.g. the customers and service staff's involvement in the planning process.

Table 1.

The Development Stages in the NPD and NSD

Development stage	NPD	NSD
Problem identification	Identifying a problem or problems to which you will then start to develop potential solutions. During this phase, it might be useful to be in contact with the people from the potential target group(s).	Identifying a problem or problems to which you will then start to develop potential solutions. During this phase, it might be useful to be in contact with the people from the potential target group(s) as well as with the service staff.
Idea generation	Developing potential solutions for the problem(s) by using different idea generation techniques. It might again be useful to have people from the potential target group(s) involved in this phase.	Developing potential solutions for the problem(s) by using different idea generation techniques. It might again be useful to have people from the potential target group(s) involved in this phase.
Concept development and testing	Forming the basic concept definitions and testing them with real customers by using either verbal descriptions or sketches of the product(s). The concept is then adjusted and developed more based on the feedback gotten from the customers.	Both, user and service staff descriptions are essential for forming the basic concepts. Both groups should be involved in the testing.
Business analysis	Analyzing the issues related to financing, technology and manufacturing.	Analyzing the economical, technological and operational issues (such as the costs from hiring and training the staff, changes in the facilities, and enhancements in the delivery system)
Development and testing	Developing the prototype of the product, including the technology, manufacturing, marketing, research and development, and design functions, as well as testing the prototype.	Challenging step when it comes to intangible factors, such as marketing, human resources and logistics. The involvement of service staff is again very important.
Market testing	Testing the concrete product on a limited market.	For example, internal testing, simulations or role-playing can be used, due

		to the difficultness of standard approaches.
Commercialization	Doing both internal as well as external preparations for launching the product.	Because it might take a while for the users to adopt the new service, the internal marketing must be very good to maintain enthusiasm for the service.
Post evaluation	Doing minor changes and improvements to the product based on the customers' reactions.	Doing surveys to examine the customer satisfaction. The concept definition may work as a focus point for improving the quality of the service.

Both the NPD as well as the NSD frameworks were utilized in this thesis, since the fitness course can be seen both as a product as well as a service. However, since the topic of the thesis is a course which is not a concrete object that the students could e.g. buy, the steps included in the NPD were slightly adapted since planning a course is slightly different than planning a concrete object. For example, creating a prototype and testing it with the potential customers was not possible in this case. The course had to be planned and organized so well from the very beginning by using the steps included in the frameworks that it will already meet the customers' needs and is based on their wishes as much as possible by the time it will be implemented for the first time.

3.2 Using quantitative research as a part of the planning process

Since the course is a service product and it should meet the customers' needs as well as possible, there was also a small quantitative research conducted before the actual implementation of the course and before preparing the course materials too much. In quantitative research, the data collected and analyzed is in a numerical (i.e. measurable) form, and it is analyzed by using different mathematical and statistical methods (Skills You Need n.d.). This research method is used for quantifying e.g. opinions, behaviors and other kind of variables within a sample taken from the researched population, and the results gotten can be then generalized to the rest of this population (Humphrey n.d.). However, to be able to do this, the sample must be large enough, the research protocol must be well planned, and

the research should be conducted successfully with as little disturbing factors that can possibly affect the reliability of the results as possible. The methods used to collect data in quantitative research are usually quite structured, and they include e.g. online surveys and polls, paper and mobile surveys, interviews, longitudinal studies and systematic observations (Humphrey n.d.).

In this case, the research was implemented as an online questionnaire, which included mainly multiple-choice questions with ready-made answer options. This made it easy to e.g. collect some basic information from the potential participants as well as ask them, what topics and themes they found the most interesting and relevant for them to be discussed during the course. The results were then mostly in a numerical form, which made them easy and quick to be analyzed.

3.3 Using qualitative research to collect feedback from the course

After the implementation of the course, there will be another type of research. This research will be qualitative, meaning that the data collected and analyzed is not in a numerical form, and for this reason it can not be analyzed by using mathematical or statistical methods. In this method, e.g. words, language, pictures and observations can be used, and it provides explanations to how and why some certain things have happened. For example, people's reasons, opinions and motivations can be researched, and the results can help the researcher to gain a better understanding on a problem or even help in developing novel ideas or hypotheses for some quantitative research. The methods used to collect data are not as structured as in quantitative research, and they include e.g. focus groups, interviews, observation, immersion and diary studies. (Skills You Need n.d.; Humphrey n.d.)

In this case, the research will be implemented as a basic questionnaire with open questions, meaning that the participants will have to come up with their own answers. The results will not be able to be analyzed as easily as the results from the first questionnaire, but this way the results are more reliable, and the participants are able to give more versatile feedback than if the questions were multiple-choice questions with ready-made answers.

4 RESEARCH CONDUCTED IN THE FIELD

Especially during the past 5 to 10 years, there have been several researches conducted e.g. about the impacts of different aerobic and strength training methods, nutrition, and dieting. The goal of all the researches has been to provide the professionals in the field more information that they can utilize in their professions. For example, personal trainers and nutritionists can plan their clients even better training and nutrition plans so that they can reach even better results when they are e.g. trying to lose weight or gain muscle mass. For example, there has been a lot of researches that have proven that doing resistance training with heavy weights and low reps can significantly increase the muscle mass and strength. However, there have also been researches indicating that also resistance training with light loading intensity increases muscle mass and strength. There used to be a very popular belief that only resistance training with heavy loading intensity increases muscle mass and strength efficiently, and resistance training with light loading intensity is only effective for endurance, but this belief turned out to be incorrect. In a research conducted by Holm et al. (2008 as cited in Training Science 2008), 12-week training programs (including 3 training sessions per week) of 10 sets x 36 reps using 15.5% of 1RM and 10 sets x 8 reps using 70% of 1RM were compared to each other. The program using 70% of 1RM resulted in 7.6% increase in muscle size and 35% increase in 1RM, when the program using 15.5% of 1RM resulted in 2.6% in muscle size and 19% increase in 1RM. This is surprisingly a lot since usually when the amount of repetitions is more than 20, the training is considered being endurance training. So, also more repetitions performed with lighter weights can increase muscle mass and strength. It is just not as effective as when there are fewer reps performed with heavier weights. This information is also emphasized during the fitness course for KAMK Sports, so that the participants will get to know that they can also gain some muscle mass and strength by using lighter weights and higher number of reps.

There has also been quite a lot of researches conducted particularly in the competitive fitness field, and especially researches related to bodybuilding are very easy to find. However, a clear majority of these researches focuses only on the

different negative health effects caused by steroids, oil injections and other similar substances, including e.g. cardiovascular disease, problems with respiratory system, kidneys and liver, multi-organ dysfunction, and even psychological disorders. There are also several older (about 20-30 years old) studies focusing particularly on different training and dieting methods used during the contest preparation phase, but majority of the athletes used in these studies were using steroids or other performance-enhancing drugs. When it comes to studies related to dieting, there was e.g. a study conducted by Lamar-Hildebrand, Saldanha and Endres (1989 as cited in Fitschen 2014), in which some of the female participants' caloric intake was reduced as low as less than 900 calories a day, which is extremely low when the great amount of strength and aerobic training during the competition preparation phase are considered. Moreover, Spitler et al. (1980 as cited in Fitschen 2014) conducted a research in which 85% of the participant's daily caloric intake consisted of protein only, which is a lot more than the current recommendations for protein intake (15-20% of the total daily energy intake). Van der Ploeg et al. (2001, 269), in turn, conducted a research related to aerobic training in which the participants started to perform aerobic exercise 344 ± 110 minutes/week 12 weeks before the competition, and about four weeks before the competition the time spent doing aerobic exercise during a week increased to 590 ± 139 minutes, meaning that the time spent on cardio was almost doubled. The participants did quite well in their competitions since some of them even won their own category, but since they were also using some anabolic steroids, the results can not be generalized to natural fitness competitors.

Even though there have been also some newer researches conducted in the competitive fitness field, there still has not been that many researches focusing on e.g. the different health effects of competition preparation especially when it comes to women and natural fitness competitors (Fitschen 2014). There have been some researches focusing on weight loss and its impacts on metabolism, but these researches have been done by using either animals or overweight and sedentary people, not usually athletes, and they have lasted for approximately one month only (University of Jyväskylä 2015). Moreover, when it comes to researches focusing on e.g. bodybuilders, they are usually only case studies, meaning that the

results gotten from the researches can not be reliably generalized also to the rest of the bodybuilders.

There has been one broad research about the health impacts of competition preparation phase in female fitness competitors. This research was conducted by the University of Jyväskylä, and the idea was to examine how training and competition diet affect a normal-weight female fitness competitor's body composition, physical performance and physiological factors (such as hormones), as well as how notable the individual differences can be and how the competitors recover from such an extreme dieting. There used to be a common belief that training and competition diet cause e.g. depression, hypothyroidism, irregular periods, and decreased quality of sleep, and even though the topic had been found very interesting and important in the field, it still was not examined that much (University of Jyväskylä 2015).

The research lasted for four months, and there were 50 normal-weight female fitness competitors in total who finished the study, including 27 participants who completed a competition diet, and 23 participants who acted as weight-stable controls. During the research, a total of three testing days were organized in a laboratory: Pre-tests before the beginning of the diet; mid-tests after the diet; and post-tests after the recovery period. During the research, the diet group's carbohydrate intake was reduced, protein intake and amount of strength training were kept high, fat intake was on a moderate level, and the amount of aerobic exercise was increased. All the participants followed their own strength training programs, which were all based on split routines in which only certain muscle groups are trained during one training session. The diet group performed strength training 4.7 ± 0.7 times per week before, during and after the diet. Aerobic exercise was performed both in a form of steady-state low to moderate intensity aerobics (such as walking, running or on crosstrainer), lasting for a total of 30-60 minutes, and high-intensity interval training (HIIT), lasting for a total of 10-25 minutes, which included several shorter 15 to 45-second high-intensity intervals with 30 to 60 seconds of recovery between the intervals. The diet group performed aerobic exercise 3.6 ± 2.8 times/week before, 4.9 ± 2.9 times/week during, and 2.3 ± 1.9 times/week after the dieting period. The participants also followed their own diets, which were very

similar when compared to each other. The daily caloric intake of the diet group was $22.9 \pm 13.8\%$ lower during the competition diet when compared to the time before the diet. (Hulmi et al. 2017.)

After the diet, those participants who belonged to the diet group gained back almost all the body mass and fat mass they lost during the diet. There was a slight decrease in some of the participants' lean mass during the diet, but that also returned to the baseline during the recovery period. The diet also caused a slight decrease in the participants' total bone mass, as well as in the upper body strength. When it comes to hormones, the levels of leptin, testosterone, triiodothyronine (T_3), and estradiol decreased during the diet. From these, leptin and estradiol returned to the normal levels during the recovery period, but T_3 and testosterone did not. Another hormone called thyroxine (T_4), in turn, increased slightly during the diet, and returned to the baseline during the recovery period. When it comes to the other physiological factors, systolic blood pressure (meaning the pressure the blood puts to the walls of the arteries when it is pumped from the heart) and heart rate decreased during the diet and did not return to the baseline during the recovery period. Hematocrit percentage (i.e. the amount of red blood cells in the blood) and hemoglobin (i.e. an iron-containing protein in red blood cells), in turn, decreased during the diet but returned to the baseline after the recovery period. The diet also caused some irregular as well as missing periods among the participants during and after the diet, and there was also a slight decrease in the participants' vigor in the middle of the diet. (Hulmi et al. 2017.)

The research showed that a diet aiming for a very low bodyfat percentage can be completed without significant losses of lean mass, muscle size and muscle function in normal-weight female fitness competitors. The factors making this possible in this research included the followings: 1) The participants' bodyfat percentage was relatively high (about 19-25 %) in the beginning of the diet, and the lower the percentage is in the beginning the more lean mass will be lost during an energy deficit like this, 2) the daily protein intake was kept relatively high (about 3 g/kg BW) also during the diet, 3) both resistance as well as aerobic training were performed during the diet, which have been shown to reduce the loss of lean mass and muscle size during energy deficit, 4) the participants' bodyweight changed

quite slowly during the diet (about 0,4 kg/week), which is also recommended for diets aiming for fat-loss, and 5) some of the participants had not been into strength training for that long yet (average 3.5 ± 1.4 years), so they were even able to gain some more muscle mass also during the diet when they continued performing strength training and kept their daily protein intake high. In addition, the diet also affected the endocrine system, but it started to function normally in most of the participants after the recovery period. (Hulmi et al. 2017.)

The results gotten from this research showed that training and dieting methods used in different fitness disciplines, which are also discussed during the fitness course for KAMK Sports, are efficient and not as harmful as it was believed. Since there might be students with some beliefs that this kind of training and dieting methods are e.g. not safe or that it is not possible to lose fat without also losing notable amounts of muscle mass, this research, its methods and the end results are possibly also discussed during the course to change these beliefs as well as to justify the training and dieting methods discussed and tried during the course.

5 SIMILAR COURSES ORGANIZED BEFORE

At least if the focus is only in Finland, there are no similar kind of fitness courses organized in the universities or universities of applied sciences. However, there are several personal trainer courses organized all around the country, and their length, price and quality vary a lot. However, there are only a few fitness coach courses organized in Finland, both being extremely new (apparently the first time the first course was organized was in the autumn 2017, and the other course started in the beginning of January 2018) and organized by Finnish Fitness Sports Association in corporation with Vierumäki Sports Institute. However, these courses are closely linked to each other since to be able to take the other course (level 2), you must first complete the other course (level 1). In addition, these courses also cost (1200 € and 1800 €), and they are only for professional coaches who are already certified Finnish Fitness Sports Association coaches but want to improve their ability to coach fitness competitors even more. The first course consists of three 3-day periods of contact lessons, preliminary tasks and tasks given for the periods when there are no contact lessons. The total amount of working hours is about 100, including about 60 hours of contact lessons and 40 hours of independent studying. The students will get e.g. a lot of general information about different fitness disciplines, and qualification to coach and instruct fitness athletes. The goals of this first course include that the students can plan and instruct single training sessions, evaluate how training affects individual's body in different ways, plan individual 8-12 long training programs and follow as well as evaluate its effectiveness, and to learn the basics of how the competition diet affects the competitor's body. (Finnish Fitness Sports Association 2017.)

The second course consists of four 3-day periods of contact lessons, preliminary tasks, tasks given for the periods when there are no contact lessons and participating in planning and organizing a fitness camp. The total amount of working hours is about 140, including 80 hours of contact lessons, about 60 hours of independent studying, and 20 hours of planning and organizing the fitness camp. After the course, the coach should be able to develop him/herself, his/her working environment and the customers on the annual level, in addition to being able to coach

athletes on both the national as well as on the international level. During this course, the coach will gain even better understanding on the competition phase including the dieting and recovery phases, fitness competitor's seasonal and annual training plan, organizing the fitness camp, mental coaching, and the ethics of sports. In addition to that the coach must already belong to the official team of Finnish Fitness Sports Association and has taken the first one of the two courses, he/she must also have at least one fitness athlete to be coached to be able to take this course. (Vierumäki 2017.)

In addition to these two courses, there is also one vocational qualification focusing on competitive fitness coaching. One of the coaches teaching during the education is Jaana Kotkansalo, who is the author of one of the books used in this thesis. This vocational qualification can be completed in Santasport which is a sports academy in Rovaniemi, and it includes vocational qualification in sports, basic studies of sports medicine, nutrition coach certificate, and studies focusing on fitness coaching. It costs 1700 €, is implemented as multiform learning, and consists of 12 3-day periods of contact lessons, each of the periods being organized about once a month. This education is for those who already have some experience from fitness coaching. Apparently, you do not have to be a professional coach already, but you can even be a person who has been coached by a fitness coach, or e.g. a person who is interested in competitive fitness but has not been competing yet. The first implementation of this education started last autumn and will end in the beginning of the summer 2018, so this is also an extremely new way to get fitness coach certificate in Finland. (Santasport 2017.)

There are also several courses organized for people who want to e.g. lose weight or improve and maintain their health, but those courses are usually organized e.g. by municipalities or different organizations. For example, an organization in Vaasa called Wasa Sports Club has an 8-week long weight loss course (price: 298 €), which includes individual training programs, instructed training sessions twice a week, instructions for healthier diet in a form of lectures and lecture materials, support from personal trainer throughout the whole course, bodyfat measurements, and muscular strength tests in the beginning and at the end of the course.

The participants also get to try out different sports disciplines together with the other participants of the course (Wasa Sports Club 2017).

To sum up, even though there is a great amount of various kinds of courses being organized outside universities and universities of applied sciences, there are no exactly similar kind of courses organized to this fitness course for KAMK Sports. All the courses that are particularly related to fitness disciplines are mainly for professionals from the field or for those who already have some experience from competitive fitness disciplines, not for those who might not have experience from training or dieting at all. Moreover, the participants must pay for the courses, they last quite a long time and they are implemented as multiform learning. The other courses in turn, are more targeted for those people who want to improve or maintain their health, not for those who are interested in fitness disciplines or competing in them. So, in addition to being able to say that this course is unique in the universities and universities of applied sciences, it is also unique when compared to the similar courses organized elsewhere.

6 THE QUESTIONS TO WHICH THE COURSE ANSWERS

As it was already mentioned, the main question and research problem to which the course gives an answer is “What is competitive fitness?”. Moreover, there are also some secondary questions/problems to which the course answers to cover all the most essential topics and aspects related to the competitive fitness disciplines. These questions/problems are the followings:

- 1) What kinds of fitness disciplines are there in Finland, including e.g. their requirements, posing, and competition categories, rounds and their assessment?
- 2) What kind of training and nutrition are required to eventually reach the desired competition physique?
- 3) How to get started with your own fitness career?

The course is suitable for both, the students who do not know that much about different fitness disciplines yet as well as for those who already have more knowledge about them. For this reason, the course begins with general descriptions on what all kinds of fitness disciplines there are in Finland, since in addition to some older disciplines that are also known by those who do not have that much knowledge about the disciplines, such as bikini fitness and bodybuilding, there are also some less-popular, newer and not so well-known disciplines, such as wellness fitness and women’s fitness. Students who are considering on participating in some fitness competition in the future might find some of these less well-known disciplines more suitable for them than some of the better-known disciplines.

Also, the requirements for each discipline are discussed since they can be quite different when compared to each other, especially when it comes to the requirements for the physique and posing. Certain disciplines usually already require a certain body type, meaning e.g. that the upper and lower body should be in certain proportion to each other, shoulders and hips should be certain width etc. People have different body types, and for this reason not every fitness discipline suits for everyone. In addition, not everyone wants to develop similar kind of lean and

“lighter” physique which is required in bikini fitness, or as muscular, hard and dry physique which is required in bodybuilding or women’s physique. Also for this reason, the course discusses all the fitness disciplines in Finland so that the course participants could find the discipline that they find the most interesting and suitable for them.

The competition categories, competition rounds, and their assessment are also discussed since they are also different in almost all disciplines. For example, in some disciplines there are only physique rounds included when in some other disciplines there are also routine rounds. If there are students interested in competing in a discipline where there are only physique rounds, they will get more information about those kinds of disciplines. If there are students interested in disciplines with routine rounds, they will get more information about those kinds of disciplines. In addition, the assessment criteria for the physique and routine rounds in each discipline is discussed, since also those are different in each discipline.

To reach the competition physique, training and diet are extremely crucial factors to consider. For this reason, also the strength training and aerobic exercise as well as dieting for a competition are discussed during the course, and the participants will also get to go to the gym and try what it is like to train for a fitness competition in practice. In addition, even if there were students who might not be that interested in competitive fitness but are into gym training and muscle-building or are studying sports and want to get some information about these for their future careers, they can get some training and dieting tips that they can benefit in their own training programs and diets or in their future profession.

The last topic the course discusses is how to get started with your own fitness career. This is because there might be students interested in starting their own competitive fitness career, but they do not know where to start. Moreover, the information related to this topic is quite challenging to find, which makes it even harder for a beginner to find enough reliable information. For this reason, including a lecture focusing on this topic is necessary, since the students will get to know what they should do to begin their fitness careers as well as what happens after they find a suitable coach or a training team for them.

7 PRODUCTION PROCESS

During the planning and production process of the course, both the new product development as well as the new service development frameworks were applied in addition to using quantitative and qualitative research methods to include also the potential course participants to the planning process in order to make the course more customer oriented. Some of the steps in the frameworks had to be slightly adjusted due to the nature of the service product but all the steps were still included in the process. The whole process lasted for almost a year, and some of the steps were easier and faster to complete when some other steps were more challenging and took more time to be completed. Next, the whole production process, including also the description and justification of the target group, and the description of the collection process of the materials and the contents of the course, are discussed in the following chapters.

7.1 Description and justification of the target group of the course

The target group of the course is KAMK Sports' customers, i.e. the students of KUAS. However, since the course is related to sports, the main target groups are the sports students, the other students who can include the course to their studies, as well as those students who are interested in training and dieting and that way possibly also in fitness disciplines. The reason why sports students and the other students who can include the course to their studies form one of the main target groups, is that in addition to getting information about different fitness disciplines, they will also get some general information about training and dieting which they can utilize in their own future careers as well as in their own training programs and diets. In addition, if there is someone interested in competing in some fitness discipline by themselves or working as a fitness coach, they will also get information they can utilize in those. Moreover, these students will also get two free choice credits from the course.

The reason why the other main target group is the other students interested in training, dieting and fitness disciplines, is that they will get more information about those topics and can then utilize it in their own training programs and diets. The course will be very useful especially for those who have not started yet or have just started training and eating healthier, as well as for those who would be interested in competitive fitness but do not know where to start to look for information and would need someone to help them to get started.

7.2 Acquiring the material for the course

Most of the material needed for the course were gathered almost completely from the existing literature available. The theory needed for the contents of the course was gathered from reliable books and websites that have information about fitness disciplines as well as e.g. from gym training, aerobic exercise and dieting. The most reliable and for that reason the most used sources for the contents of the course were the websites of Finnish Fitness Sports Association and the International Federation of Bodybuilding and Fitness, in addition to a few books, including Kaikki Kuntosaliharjoittelusta (Aalto et al. 2014) and Intohimona Fitness (Kotkansalo 2015). The websites are maintained by professionals from the competitive fitness field, and the books are also written by professionals, such as former fitness competitors and current personal trainers and fitness coaches.

In addition, since the course is a service product, it should somehow meet the customers' (i.e. the students') needs and be relevant for them when it comes to the contents of the course. For this reason, there was a small quantitative research conducted before the actual implementation of the course and before planning and making the course materials too ready. This research was a simple online questionnaire, in which the students were asked if they were interested about a course like this and what different topics and themes they found the most interesting and relevant for them to be discussed during the course, since this way the course contents and materials could be planned so that they serve the customers' needs as well as possible. Those topics and themes that the potential participants did not find that interesting were focused on less, and those that the participants found

the most interesting and relevant for them were focused on more. The students were also asked e.g. what kind of teaching methods and exercises/tasks they preferred to be used during the course, since this way the instructor of the course will be able to use the most effective teaching methods and exercises when giving the lectures and instructing the other sessions, and make sure that the participants will also learn the topics as efficiently as possible. The questionnaire was also used to collect some basic information about the potential participants, such as what field they were studying and where they were from. The questionnaire was sent to all students of KUAS via KAMK Sports' email in addition to posting the link to the questionnaire on their Facebook page, and the answers were given anonymously, which should guarantee that the results gotten are quite reliable.

There will also be some information collected at the end of the course, but this is mainly feedback from the course, and it will be used for developing the course and its contents even more if there is a need for it and if the course will be organized again in the future. The feedback questionnaire will be sent via email only to the participants of the course, and the answers are given anonymously again.

7.3 The contents of the course

The contents of the course are so detailed and professional that they are interesting and relevant enough for the sports students who already have some knowledge from the field. On the other hand, the contents are also so simple and easy to understand that also those students who do not have that much knowledge yet will be able to understand and learn the topics and themes discussed. For this reason, none of the topics and themes discussed during the course are discussed too much in detail so that everyone is be able to understand and learn them.

During the course, there will be lectures during which the instructor of the course firstly tells about the different topics explained previously in the theoretical background (generally one topic per contact lesson) and uses e.g. PowerPoint slides, pictures, websites and videos to support her/his teaching, after which there can be some group or individual tasks and exercises given to the students to work on

either during the lectures or at home. Moreover, when it comes to the students who will also get credits from the course, some of the given tasks and exercises are compulsory for them so that they reach the required amount of working hours needed for the credits.

There are also going to be some more practical sessions e.g. at the gym, in which the participants can test the different exercises, training programs and training methods used particularly in fitness disciplines. Some of the sessions are held in the musical exercise room, in which the participants are taught how to do the I-walk and pose onstage in different fitness disciplines. The students are also given some group or individual tasks and exercises during these more practical sessions.

The length of the whole course is about one to two months, and the length of each contact lesson is typically one to two or two to three hours depending on the theme and the contents of the lesson. If the theme discussed is very broad or there is some group task, the lesson will be longer especially if the task should be ready and returned already during the lesson.

7.4 The planning, organizing and implementation process of the course

As it was already mentioned previously, the eight steps in the NPD and NSD frameworks in addition to the quantitative and qualitative researches, which were very important part of the development process, were used when planning the course, and they will also be used when the course is organized and implemented. Since the nature of this service product was slightly different than an ordinary product or service, the development stages needed to be adjusted a bit. For example, there was no testing done on a limited market, but the actual course will be implemented after the commercialization stage.

7.4.1 Problem identification and idea generation

During this phase, which started in the beginning of September 2017, the author first thought about the possible commissioning party as well as the potential topics for the thesis. Since the author was very interested in competitive fitness, she decided to have a topic related to different fitness disciplines. In other words, the commissioning party had to be some organization that offers services or products also to people interested in competitive fitness.

After starting to consider KAMK Sports as the commissioning party, became an idea of a fitness course which would be organized for those students of KUAS who are interested in competitive fitness. KAMK Sports already had several different sports services and products offered for the students, including a gym training course for the beginners, but there was nothing related to competitive fitness yet. In addition, the author had never heard of this kind of course being organized anywhere else before. There were courses from which people could get certificates to work as personal trainers or fitness coaches, but those courses were usually only for people who already had experience or education from the field. In addition, the length of those courses varied notably (from a few days to several months) in addition to the quality, and they could be very expensive. This fitness course, in turn, would be free for the students, it would suit both the beginners as well as for those who already have some experience from the field, and it would be very informative and as high-quality, and customer oriented as the author could just possibly make it. Moreover, there was not a course particularly related to competitive fitness for the sports students or other students of KUAS who could include the course to their studies, so the course would be very beneficial especially for them when it comes to their studies and future careers, given that they are going to work in the fitness field or some other field closely linked to it in the future.

When discussing about the course with people from KAMK Sports, they also thought that since the topic was still very current, and they were not offering any services or products related to competitive fitness yet, there was an actual need for the course. In addition, KAMK Sports was going to start a new online training

program called Next Step in the beginning of the year 2018, so the course would also support that, since the program was for those who wanted to tone their body and gain muscle mass.

7.4.2 Concept development and testing

This development stage started in November 2017, and it had to be implemented slightly differently than in the original frameworks. Firstly, the contents of the course as well as some other factors related to it, such as the length, teaching methods, and goals of the course, were discussed and decided in cooperation with KAMK Sports. Searching for the information for the course via literature review also started during this stage.

The concept of the course was not tested since there was not a need for it at this point. In addition, the small research was conducted later during the development process, and during that the students could have some impact especially on the contents of the course.

7.4.3 Business analysis

There were certain factors in KAMK Sports that needed to be considered when planning the course as well as some factors that still need to be considered when the course is organized and implemented. Firstly, KAMK Sports is a small organization, which offers its services mainly for the students of KUAS, which is why their prices are relatively low and they do not get that much money from their services. Their main sources of income are the sports stickers which allow the students to use the school's gyms and other sports premises during their free time as well as to participate to KAMK Sports' instructed group exercise lessons. In addition, they get money from their personal training services and online coaching programs, and they also get orders from different companies and organizations to instruct e.g. different kinds of groups exercise lessons to their workers. KAMK Sports' outcomes, in turn, mostly consist of the instructors' salaries as well as the possible

purchases, and the marketing materials, such as flyers and business cards, also require money. (A. Meriläinen, personal communication, June 4, 2018.) Since KAMK Sports' incomes are not that big and there are also some outcomes, some of them which can be quite big such as the instructors' salaries, the fitness course should not cause much costs to KAMK Sports so that they are surely able to organize and implement it. Luckily, planning the course was free for them since it was the author's thesis, but it is still not sure who will eventually instruct the course. The course will be free for the students, so it will not bring any money to KAMK Sports, which is why also the instructor should be someone who does not need to get paid by money but more preferably e.g. by study credits.

Secondly, all KAMK Sports' workers are students from KUAS, and they usually apply new workers via school's email. Some students have also contacted them independently, if they have been interested to work in their organization. By applying new workers like this, KAMK Sports does not have to spend any money on the applying process, which is smart since the organization is not that big after all and spending more time and money on applying new workers is not even necessary for them (A. Meriläinen, personal communication, June 4, 2018). So, to avoid some additional costs when applying the instructor(s) for the course, it would be better to apply also the instructor(s) via school's email.

Thirdly, all KAMK Sports' workers should have some experience from instructing sports or some degree from the field, and they should also be able to speak English since they also have foreign students participating to their group exercise lessons. If someone wants to do their practical training at KAMK Sports, it is enough that they are studying the field of sports, meaning that they do not necessarily need any previous work experience or degree from the field (A. Meriläinen, personal communication, June 4, 2018). So, when applying the instructor(s) for the course, they should also already have some experience especially from the fitness field or at least study the field if they are practical trainees and be able to speak English since the course will be held in that language.

Fourthly, when KAMK Sports hires a new worker, they usually first communicate via phone or email, after which they have an interview with the worker during which

they also sign the contract of employment and clarify the job description by utilizing the worker's previous experience and know-how. The worker is also familiarized with the premises and equipment. When it comes to instructing the actual lessons, the new workers do not usually need to be familiarized with the group exercise lessons since they have usually already instructed lessons like the ones they instruct at KAMK Sports somewhere else (A. Meriläinen, personal communication, June 4, 2018). This also saves KAMK Sports' owners' time and money. So, when a suitable instructor or instructors have been found, their job descriptions should be clarified, and responsibilities shared between them (i.e. one instructor teaches some topics, the other one some other topics etc.) preferably based on their previous experiences and know-how, after which possible familiarization with the premises and equipment is done. However, if the instructors are some students from KUAS and they have experience from the fitness field, this kind of familiarization will not be necessarily needed. This way KAMK Sports also saves time and money when they do the course's instructors' hiring process in the same way than their other instructors' hiring process.

Fifth, the main job tasks of KAMK Sports' instructors include planning and instructing the group exercise lessons. Of course, they must also make sure that their lessons are safe, they should check that the participants of the lessons have the sports stickers and write down those participants' names who only participate to individual lessons. Their work days usually last as long as the group exercise lesson(s) they instruct last. However, they must also plan and practice their lessons outside their working time, which might take several hours. (A. Meriläinen, personal communication, June 4, 2018.) In other words, it would also be better if the instructors of the course had similar job tasks than the instructors of the groups exercise lessons. This means that they would go through the course materials and lesson plans beforehand (i.e. during their own free time) and adjust them if needed so that they can surely teach their lessons effectively. Their job tasks would also include checking the present participants in the beginning of each lesson and making sure that those students who want to get the study credits do and return all the compulsory tasks and exercises. In addition, since there are going to be one to two lessons per week, the instructors probably should not have e.g. some group exercise lessons to instruct on a weekly basis in addition to the contact lessons of

the course. This way their work days will not become too long especially if they also must complete their own studies at the same time, and their possible salary will not be too much higher when compared to KAMK Sports' other instructors' salary. KAMK Sports' instructors get paid 15 euros per hour in addition to getting study credits from each hour. The salary is very good since e.g. instructors working at Kainuun Liikunta get paid less, and the study credits also enhance the students' studies. The owners of KAMK Sports get paid about 100 euros per month (A. Meriläinen, personal communication, June 4, 2018). Since the instructor's hourly salary is so high and KAMK Sports already has quite many instructors, the fitness course should not probably have more than a maximum of two instructors since three instructors would already be too much when considering the length of the course and KAMK Sports would probably not be even able to hire more instructors for the course given that the course instructors are also paid by money.

It is still quite difficult to estimate what kind of costs this fitness course will cause to KAMK Sports, since this is the first actual course KAMK Sports has ever organized, and it is still not sure how many of KAMK Sports' current workers will be present in the spring 2019 and how well they will be able to organize the course. KAMK Sports will not probably be able to hire someone who should be paid by money to instruct the course, but the instructor should be someone who could instruct the course and get paid preferably by study credits. However, the instructor should clearly be someone who already knows something about the topic of the course (A. Meriläinen, personal communication, June 4, 2018).

If all previously described factors are considered by KAMK Sports when organizing and implementing the course, the course should not cause much costs to the organization. The course contents, materials as well as teaching and studying methods are already planned and made and they were free for KAMK Sports, and they will not have to do much to advertise the course. They only need to find someone who could be paid preferably by study credits to instruct the course, and book the premises (i.e. the gym, musical exercise room and classrooms) for the contact lessons. Also, conducting the last feedback survey at the end of the course and possibly developing the course and its contents and materials even more for the next implementation are now their responsibility. All of these will not necessarily

require any financial resources, but they will require KAMK Sports' owners' as well as their instructors' time.

7.4.4 Development and testing

Development and testing stage started already in December 2017 and ended in May 2018. During this stage, most of the materials, such as PowerPoint presentations, instructions for the lessons, videos, and tasks for the course were gathered, planned and made based on the information gathered during the literature review. Also, the preliminary structure, length and schedule of the course were planned. However, none of these were made too ready, since they needed to be adjusted based on the answers gotten from the first research, which was also included in this stage.

The first research: Conducting an online questionnaire to include the customers to the planning process

After the materials were made as ready as they could be at this point, the first questionnaire was sent to the students of KUAS in May 2018. As it was already mentioned, the questionnaire was sent to all students of KUAS, including e.g. sports, engineering, tourism, business, and gaming students, since anyone who wants will be able to join the course, and for that reason there was no specific group of students chosen for the research.

The questionnaire, which can also be seen in Appendix 1, was made by using Google Forms, and it included a total of eight simple questions, all of them being multiple choice questions. It was sent to the students by KAMK Sports via their email in addition to posting the link to the questionnaire on their Facebook page, and they had a week time to fill it out. After all the answers were gotten, they were analyzed, and the course materials, contents, structure, and schedule were adjusted based on the answers gotten from the research. This was done so that e.g. those topics that the potential participants found the most interesting and relevant

for them were discussed more and those found less interesting and relevant were discussed less. Also, the specific teaching methods, tasks, times for the contact lessons, the participants previous experience and knowledge from strength training and competitive fitness, as well as some general information about the participants was asked. This way the course was more customer oriented since the customers had a chance to affect e.g. the contents, structure, schedule as well as the teaching methods and tasks used during the course.

7.4.5 Commercialization

Since this is the first time when this kind of course is being tested and organized, there was no need to make an actual commercialization for the course. Also, a specific marketing plan was not necessary since the commissioning party is such a small organization that the course will also be organized in relatively small-scale. However, there were certain ways and channels to advertise the course decided in cooperation with KAMK Sports. Some of these already advertised the course, and some of them will still advertise the course when the eventual implementation of the course is getting closer.

Firstly, the first questionnaire already advertised the course, since it already provided the students information e.g. about the topics discussed during the course, the teaching methods as well as the target group. In addition, at some point of the autumn semester 2018, there will be an advertisement in KAMO's weekly newsletter, and maybe also on the info-TVs on the campus, and there will also probably be some posters put on the walls of the school. The author planned a preliminary advertisement/poster, which can also be seen in Appendix 2, already during the spring 2018. In addition to different posters and advertisements, the instructors from KAMK Sports as well as those teachers who teach some courses especially to sports students and other students who could include the course to their studies, could tell the students about the course.

Even though the fitness course will be for KAMK Sports and they have certain requirements e.g. for the outlook of their advertisements and other information flyers and emails, the author was still mainly responsible for e.g. making the advertisement poster for the course since she was also responsible for the whole planning process of the course. She knew the best what the course will be like, which is why she could also include all the most essential information to the advertisements.

7.4.6 Implementation of the course

This stage has not been completed yet, because the author herself was not able to implement the course during the spring semester 2018, but it had to be moved to the next spring semester. However, this stage replaces the market testing stage, because testing this course beforehand by using e.g. internal testing or stimulations would have been quite challenging. The customers and staff's opinions have already been considered as much as it is possible at this point when it comes to a course like this.

When it comes to the upcoming implementation of the course, it will begin with an introduction lecture during which the participants will be given a general overview of the course and its contents. The first 30 students who have informed KAMK Sports via email that they would like to join can come to this first lecture, after which they can decide if they want to participate also to the rest of the course. After the first meeting, there will be more lectures as well as posing practices and gym training sessions, all of them including some tasks and exercises, and all of them being adjusted based on the answers gotten from the first questionnaire. The more detailed preliminary structure and contents of the course can be seen in Appendix 3.

In addition, some of the tasks and exercises done during and outside the contact lessons are compulsory for the students who will also get free choice study credits from the course, meaning the sports students and other students who can include

the course to their studies. This is because if the tasks and exercises are not compulsory for them and they do not do and return them, they will not reach the required amount of working hours needed for the credits.

There will be one to two sessions organized each week, one session lasting for about one to two hours depending on the topic and contents of the session, and the whole course lasting for about one to two months. The course will be held by one or two of KAMK Sports' workers, either some current ones or some newer ones.

7.4.7 Post evaluation: Conducting a feedback questionnaire to the participants of the course

As it was already mentioned, there will be a feedback questionnaire, which can be seen in Appendix 4, sent to the participants of the course, of which they will answer anonymously and in which they will be asked about what they liked the most about the course, what they liked the least, how they feel like the course fulfilled their needs and wishes, what could have been done even better etc. In other words, the questions in this questionnaire are open, meaning that the participants can answer them freely. This way the feedback gotten will be more reliable and the participants can also surely give feedback about all those things that they think need to be given feedback about. The feedback gotten straight from the participants is the best way to evaluate the successfulness of the course, since the course is, however, a service product aimed particularly for them, which is why it is necessary to check how well the course eventually met their requirements and expectations.

8 RESULTS

Close to the end of the planning process of the course, the potential participants answered to the first questionnaire and the results from that were analyzed, after which the course materials, contents and teaching and studying methods were adjusted. As a result, the principles of the product and service development were fulfilled, since the customers were also included in the planning process. The final course now focuses more on the topics that the potential customers found the most interesting and relevant for them and less on those topics that were found less interesting and relevant. Also, the teaching and studying methods used are chosen based on the potential participants' opinions, in addition to the times at which the contact lessons of the course are going to be organized. The exact results from the first questionnaire, how the course was adjusted based on these results as well as the final course are discussed in the following chapters.

8.1 The results gotten from the first online questionnaire

Like it was already mentioned, the first questionnaire was implemented as a part of the planning process of the course to include also the potential participants of the course to the planning process. They were asked a series of multiple-choice questions related to the course, its contents and preferred teaching and studying methods in addition to questions related to the potential participants themselves. Next, all the questions and the results for each of them are reviewed and discussed more in detail.

8.1.1 General information about the participants

A total amount of answers received after the one-week period was 46, from which 33 participants (71,7%) answered that they would be interested in a fitness course like this. However, some of the participants did not answer all the questions in the questionnaire.

From all participants, 26 so more than half (60,5%) were sports students, when the second biggest group with five participants (11,1%) was the nursing students, and the third biggest group with four participants (9,3%) tourism students. The rest of the participants included e.g. business, hospitality management, and engineering students. From all participants, 41 were from Finland (91,9%), and the rest of the participants from some other countries, including the Netherlands, Iraq, Estonia and Russia.

Based on the results, the questionnaire reached students from several fields of studies, and those students that would benefit the most from the course, meaning the sports students as well as the other students that could include the course to their studies, were the most active when fulfilling the questionnaire. However, a clear majority of the participants was from Finland and only five from abroad, which might lead to challenges when implementing the course especially if most of these Finnish participants can not speak or understand English fluently since the course will be held in English. If there are only a few international participants, it would probably be better to plan and implement the course in Finnish, or maybe plan a separate Finnish version of the course for the Finnish students while keeping also the English version of the course.

8.1.2 The interest towards the different topics and themes, and how the course materials were changed based on these results

The next questions were related to the course itself and the things that the participants could have an impact on. The specific results from the first this type on question, in which the participants were asked which ones of the listed topics and themes they found the most interesting and/or relevant for them to be discussed during the course, can be seen in Figure 1. They were also provided with an option to give their own suggestions for the topics to be discussed during the course, but there were no answers given to this option.

The topic that was found the most interesting and relevant among the participants (29 participants, meaning 74,4%) was fitness competitor's nutrition in general. The preliminary materials, such as PowerPoint Presentation made for the lesson focusing on nutrition, were already so broad and detailed that there was no need to make e.g. the presentation longer. There were also a few practical exercises for the lesson focusing on this topic, so there was also no need to add more exercises.

The second most popular topic was strength training in fitness disciplines (27 participants, meaning 69,2%), which is naturally very essential part of the course because it is needed to build the muscles required in different fitness disciplines. The author was also prepared that this topic would also be very popular among participants and had already collected and made so much and so detailed lecture materials as well as the materials and exercises for the practical gym training sessions, that collecting and making more materials and exercises was not required.

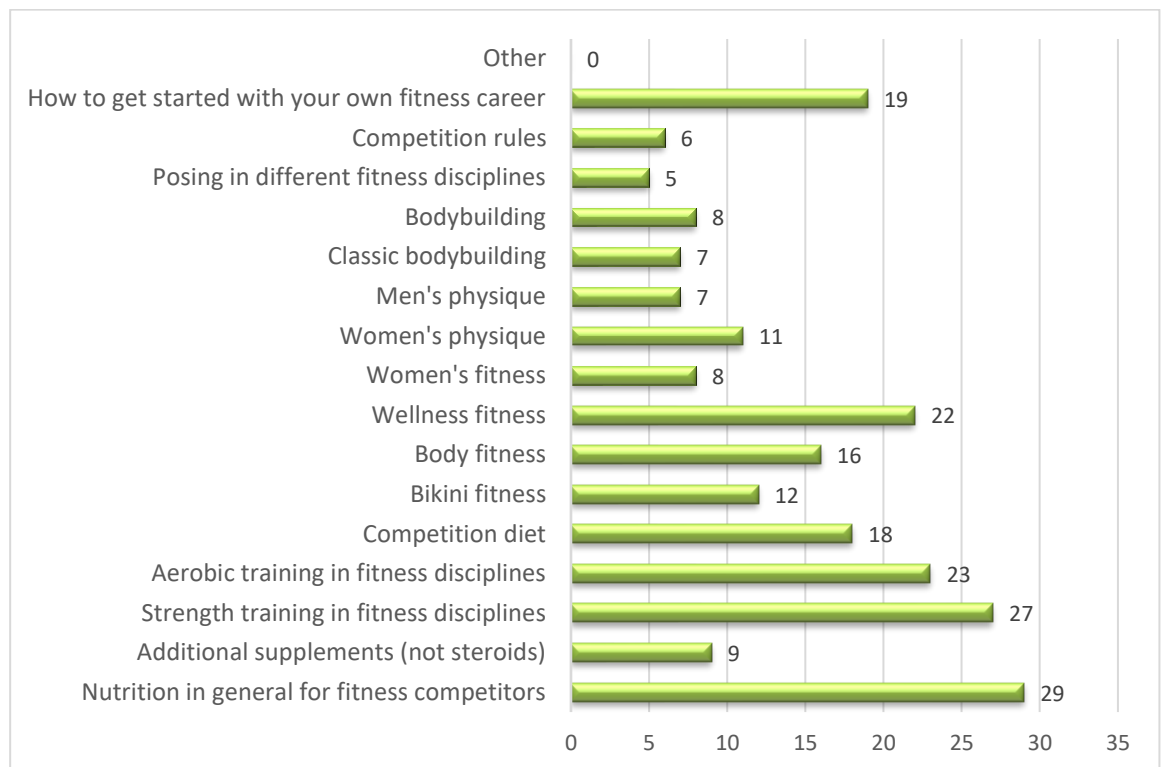


Figure 1. The results to the question “Which ones of the following topics/themes you find the most interesting and/or relevant for yourself to be discussed during the course?”

The third most popular topic was aerobic training in fitness disciplines (23 participants, meaning 59%), which was also predictable since that is one of the factors in fitness disciplines which is probably not discussed as much as e.g. strength training or nutrition, meaning that people do not have as much knowledge about it as from those. However, the materials made for the lesson focusing on this topic had to be made a bit more detailed since the topic was found slightly more popular than the author expected, and the materials were not as detailed as e.g. the materials for the lessons focusing on strength training. This was done by e.g. adding information to the PowerPoint presentation and searching for interesting videos related to the topic.

Surprisingly, the fourth most popular topic (22 participants, meaning 56,4%) as well as the fitness discipline that was found the most interesting and relevant, was wellness fitness, which is a very new discipline both in Finland as well as on the international level. For that reason, it is natural that it was found this interesting among participants, since they do not know probably anything about it yet. Based on this result, the author made the wellness fitness-related part from the lesson focusing on different fitness disciplines slightly more detailed.

The fifth most interesting and relevant topic among participants (19 participants, meaning 48,7%) was how to get started with your own fitness career, of which the author expected to be slightly more popular, as well as the topic that was found the sixth most popular, meaning the competition diet (18 participants, meaning 46,2%). For this reason, the lecture materials for the lessons focusing on these two topics were made slightly shorter and less detailed, leaving only some additional facts in addition to the most important and relevant information. This way more time could be used for teaching and studying those topics that the participants found more interesting.

The next most popular topics included body fitness (16 participants, meaning 41%), bikini fitness (12 participants, meaning 30,8%), and women's physique (11 participants, meaning 28,2%), meaning that already half of the most interesting and relevant fitness disciplines are women's disciplines, indicating that female students have probably been more active when fulfilling the questionnaire. Since

these topics were not found that interesting and relevant either, the parts focusing on those from the lesson discussing the different fitness disciplines were also made shorter and slightly less detailed.

The remaining topics that were found the least interesting and relevant included additional supplements (9 participants, 23,1%), women's fitness (8 participants, 20,5%), bodybuilding (8 participants, 20,5%), men's physique (7 participants, 17,9%), classic bodybuilding (7 participants, 17,9%), competition rules (6 participants, 15,4%), and posing in different disciplines (5 participants, 12,8%). The most shocking finding when it comes to these was that only five students were interested in posing which is, however, one of the most important factors when it comes to competing. When making the materials shorter and less detailed for all the previously listed topics, the materials for the lecture focusing on posing were made just slightly shorter, even though it was found the least interesting and relevant topic among the participants. This is simply because of its significant importance in fitness disciplines.

8.1.3 Teaching and studying methods preferred during the course

The next question asked about the teaching and studying methods preferred to be used during the course, and the specific results to this question can be seen in Figure 2. In addition to the readily-listed answer options, the students were also provided with an option to give their own suggestions for the different methods, with only a few students choosing this option; The other one saying that he would prefer none of the listed methods, and the other one suggesting own body control training without weights, but this type of training was already included in both the theoretical as well as the practical lesson focusing on strength training.

The most preferred teaching/studying method among the participants (32 participants, meaning 80%) was training sessions at the gym, which the author could already expect, and had for that reason already planned a few longer, more practical sessions at the gym, including also some theory. The next most preferred method (26 participants, meaning 65%) was lectures given by the lecturer, which

was good since there were already a lot of lectures and lecture materials made and collected. In other words, there was no need to e.g. decrease the number of lectures given during the course.

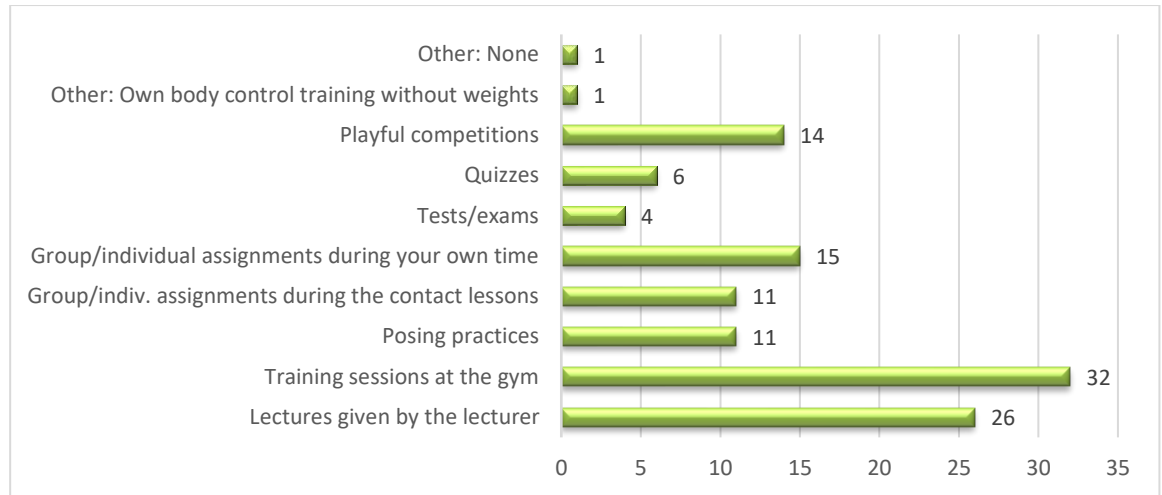


Figure 2. The results to the question “Which ones of the following teaching and studying methods you would prefer during the course?”

The third and fourth most preferred methods, which were already clearly less popular than the two most preferred methods, were group/individual assignments during your own time (15 participants, meaning 37,5%) and playful competitions (14 participants, meaning 35%). There were already quite many assignments planned to be done during the students’ own time, but there was only one playful competition planned by that time. For this reason, there were a few more playful competitions included at the end of some lessons.

The fifth most preferred methods included group/individual assignments during the contact lessons (11 participants, meaning 27,5%) as well as posing practices (11 participants, meaning 27,5%), which was a bit of a surprise since posing in different fitness disciplines as a topic to be discussed was not that popular. The amount of assignments planned for the contact lessons was already big enough so there was no need to add more of those. Since the posing practices were found more popular than the lecture focusing on posing, and the preliminary materials for the posing practices were made quite broad and detailed, the author decided to make

them only slightly less detailed, since this way the students would still learn all the essential information related to posing in different fitness disciplines.

The least preferred methods included quizzes (6 participants, meaning 15%) and tests/exams (4 participants, meaning 10%). In the preliminary materials, there was only one quiz included, and the author decided to leave it there since that brought little variety to the teaching and studying methods used. Since tests and exams were so unpopular, they were decided to be left out completely.

8.1.4 Participants' previous experience and knowledge from strength training and competitive fitness

The next few questions were quite important when planning the lectures for strength training and different fitness disciplines as well as the more practical sessions focusing on these. The first question was about the participants' previous experience and knowledge from strength/gym training. From all participants, 40 of them (90,9%) already had some experience and knowledge from gym/strength training, which was very good thing since this way the lecture materials, exercises and the practical sessions could also be planned slightly more informative and challenging.

However, when it comes to the participants' previous experience and knowledge from competitive fitness, only 12 of them (27,3%) answered that they had some previous experience or knowledge, when the rest 32 (72,7%) answered that they had no previous experience or knowledge. For this reason, the lessons focusing on competitive fitness disciplines could not be planned so informative and challenging for the participants. If there was too much or too complicated information for the participants to understand, the participants would not learn even at least the most essential information about the different disciplines.

8.1.5 The preferred times for the contact lessons

The last question, to which the specific results can be seen in Figure 3, was about the preferred times for the contact lessons. Also, in this question, the participants were given an option to give their own suggestions for the preferred times in addition to the readily-listed options. For most of the participants, the time did not matter (18 participants, 42,9%), which was a positive thing since this gives the person who decides the final dates and times for the lesson more freedom. The next most popular answer was in the evening (15 participants, 35,7%), meaning that if there had to be some lessons also in the evening e.g. because the students did not have any space in their schedules earlier during the day, this would not be a big problem for them.

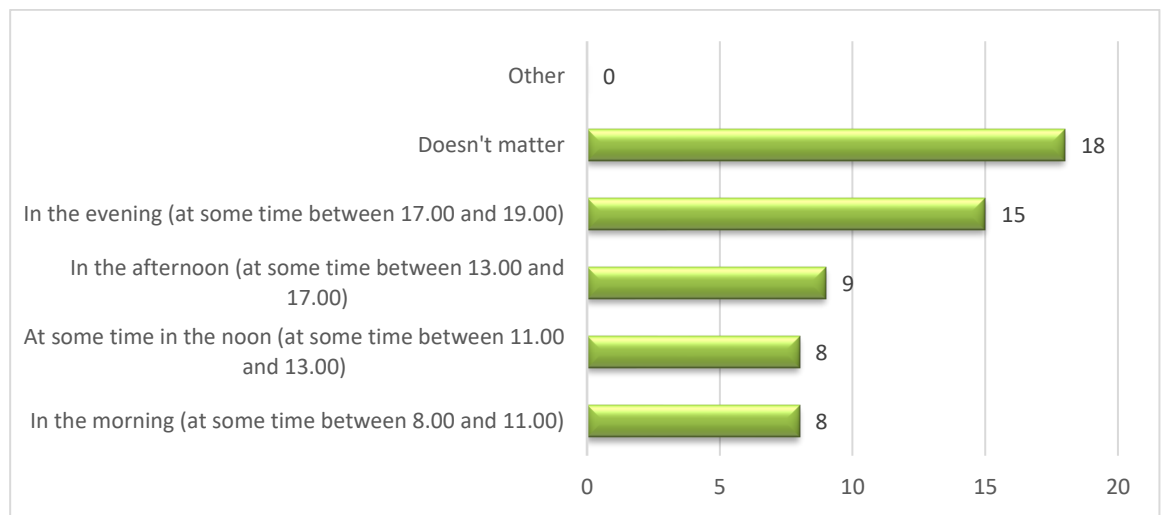


Figure 3. The results to the question “At what time(s) of the day would you prefer the lectures and other contact sessions to be?”

The three least preferred times included in the afternoon (9 participants, 21,4%), at some time in the noon (8 participants, 19%), and in the morning (8 participants, 19%). However, these times were not so remarkably less popular than the other ones, so there will also be some individual lessons at these times.

8.2 The final course

After the results from the first questionnaire were analyzed and taken into consideration when changing and adjusting the course contents, tasks, exercises, teaching and studying methods, and all the other materials, all these were then given to KAMK Sports, which will now be responsible for organizing and implementing the course during the spring semester 2019. There is now a total of 12 lessons planned for the course, including both theoretical as well as practical contact lessons. If the course will be organized and implemented in such manner that there are two lessons per week, the implementation of the course will take approximately six weeks, meaning about one and a half months. Some of the lessons are held in classrooms, some of them at the gym, and some of them in the school's musical exercise room. These lessons include lectures given by the instructor(s) of the course, playful competitions, some tasks and exercises done both in groups as well as individually, and some tasks and exercises during the lectures as well as during the students' own time. Some of the topics and themes are discussed more during the course and some of them are discussed less based on the students' interests towards the different topics. There are both, a bit shorter lessons, which last for approximately one to one and a half hours, as well as some longer lessons, lasting for approximately two to three and even up to three to four hours.

The total number of students who can participate to the course is a maximum of 30 students. There will be this kind of limitation because otherwise the group would be too big for a course like this. For example, going to the gym or the musical exercise room with more than 30 students would not be a clever idea, since there would not be enough room, machines or equipment for everybody, instructing everyone during every lesson would be impossible, and evaluating everyone at the end of the course would be quite challenging.

When it comes to the students who will also get free choice study credits from the course, they will be evaluated based on how they do the different tasks and exercises (must be all done and returned by the end of the course), how they participate during the contact lessons (e.g. participation to the discussion), and their

course attendance (they must be present on at least 80% of the contact lessons). They will get a total of two free choice study credits, and the grade will be either pass or fail, meaning that the grade will not be in a numerical form.

After the first implementation, the qualitative feedback questionnaire will be sent to the participants of the course, and the answers gotten from this are then used to develop the course and its contents even more. The course can be then organized and implemented again later for the next students who are interested in it.

9 DISCUSSION

All in all, the planning process of the course was very long as well as very demanding for the author at times. Even though we are only talking about a single course, the topic was extremely broad because of the vast number of factors and aspects that needed to be considered when talking about competitive fitness, such as strength and aerobic training, nutrition, additional supplements, posing, registration rules etc. However, if the course would have only focused on e.g. strength training in different fitness disciplines, several other factors being just as important as that would have been left out, simultaneously providing very narrow point of view to the topic. So, with the current versatile course materials focusing on the vast number of different topics and themes related to competitive fitness, we can say that the course can very successfully answer the main research question “What is competitive fitness?”.

When planning the course and collecting and making the materials for it, the planning phase and information collection were the most significant phases since after those were completed, almost all the course materials could be made directly based on the plans made and information collected. Since the planning and information collection phase were such important, a lot of time was used for those since when those phases were done as carefully as possible, the actual making of the course materials did not require as much time as if the planning and information were done less carefully. However, even though most of the materials were planned and information collected already during the autumn semester 2017, the author was not able to fully concentrate on planning the materials and collecting the information in the beginning of the spring semester 2018. This led into a situation where the author was in a huge rush to get all the rest of the materials planned, information collected, and all the lecture materials made. Maybe at the end of the process, the quality of work was not as good as it was at the beginning of the thesis process, but this was because of the lack of time as well as energy, since the author also had some courses going on at the same time during the whole thesis process.

During the planning process, the author got to utilize several skills and knowledge she had gained during her studies in KUAS, in addition to gaining a remarkable amount of new knowledge especially related to competitive fitness, which was also one of the objectives of this thesis. During her studies, she had courses related to product and service development, conducting different researches, marketing, gym training and nutrition, all of these of which she needed also when doing her thesis. During the actual courses on which these topics were discussed, she did not get to deepen her knowledge and skills that much but when doing her thesis, she felt like that process allowed her to do that. This is because she had to apply the knowledge and skills gained during the courses as well as to search for much more information related to those topics by herself. For example, when planning the lessons related to special training techniques, additional supplements and posing, she got a remarkable amount of new knowledge related to them, especially when it comes to posing since she had never had a chance to study posing in different fitness disciplines before.

Since also the author herself has a goal of becoming a professional fitness athlete in addition to working as a professional fitness coach in the future, she gained a remarkable amount of essential knowledge from the field while doing her thesis, which will surely help her when trying to reach these goals. When it comes to preparing for a fitness competition, the author can already do quite a lot by herself without a coach or a training team even though she will also start to look for a suitable coach or a team at some point. In addition, this thesis is likely to enhance the author's possibilities to get a job e.g. from the gym since while doing this thesis the author also deepened her knowledge related to strength training, nutrition and dieting, meaning that she could even have enough knowledge to start to work as a personal trainer, for example.

In addition, the author is likely to continue her studies after her graduation from KUAS, and one of the options she was considering was the vocational qualification focusing on competitive fitness coaching in Rovaniemi, of which she had not heard before finding it while working on her thesis. This vocational qualification would allow her to deepen her knowledge and skills related to competitive fitness even more.

As it was already mentioned, the first objective of the thesis was fulfilled extremely successfully. The second objective of the thesis, in turn, was that the author could share the knowledge she had gained with other students interested in the topic by planning KAMK Sports an informative fitness course suitable for both, students with more experience and knowledge from strength training and possibly also from competitive fitness as well as for those with less or no previous experience or knowledge at all. The fulfillment of this objective can be properly evaluated after the first implementation of the course when the feedback from it is collected. However, the materials for the course were planned, made and lastly changed and adjusted from the basis of the first research conducted as a part of the planning process, which is why the course should succeed in fulfilling also this objective. Most of the participants had e.g. previous experience and knowledge from strength training which is why the lessons focusing on strength training do not start with too basic information since the participants are likely to be already familiar with the very basics of strength training. On the other hand, there were not that many participants familiar with competitive fitness, which is why there is also some very basic information included in the lessons focusing on e.g. the different fitness disciplines as well as the competition diet and aerobic exercise in fitness disciplines.

The third objective for the thesis was that the knowledge shared would be as interested and relevant for the course participants as possible and it would be taught and studied by using the teaching and studying methods preferred by the participants themselves. Even though the course has not been implemented yet, this objective was surely fulfilled since the lessons focusing on those topics that were found the most interesting and relevant were made longer and more detailed when the other, less interesting and relevant lessons, were made shorter and less detailed. In addition, those teaching and studying methods found the most popular among the participants of the first questionnaire were included more to the course contents when the methods found less popular were either included less or were completely left out. Also, the participants' opinions about the times at which the contact lessons should be organized will be taken into consideration when planning and deciding the specific schedule and premises for the course.

The only missing factor now is the instructor(s) for the course, who will come from KAMK Sports and who need to get familiar with the lesson plans, teaching materials and studying methods to be able to instruct the course in the way the students want it to be instructed. In other words, how the course will eventually be organized and implemented is now KAMK Sport's responsibility. In addition, it is also now KAMK Sports' responsibility to keep the information especially related to the different fitness disciplines in Finland up-to-date, since e.g. the rules and competition categories for those can change even annually.

Like it was already mentioned, there will be a qualitative feedback questionnaire sent to the participants of the course, which will help when developing the course in the future. However, there are already a few suggestions that the author herself would recommend being considered in the future. Firstly, already in the very beginning of the planning process of this course, there was an idea of having also some visiting lecturers outside KUAS to talk about e.g. training, competition diet or nutrition in general, and maybe even about the importance of mental health in competitive fitness. Getting knowledge from actual professionals from the field would bring some variety to the teaching of the course, and they might even provide relevant information that the author did not find when collecting, planning and making the course materials.

Secondly, the author also asked KAMK Sports about the possibility to organize a study trip to Nordic Fitness Expo (NFE), Fitness Classic or some other similar fitness competition organized in Finland, again already in the very beginning of the planning process. Organizing this would be quite expensive especially if the school paid for everything included in the trip, such as the bus drive from Kajaani to Helsinki or where ever the event happens to be and back, accommodation since e.g. NFE is a two-day event, and the tickets to the event for the whole group. Even so, the trip would still be very beneficial for the students since they would get to experience what it is like in a fitness competition, they would see athletes competing in different fitness disciplines in real life, see what happens onstage and maybe even in backstage, and get too see and ask questions from the professional from the field.

Also, the possibility to organize this course both in English as well as in Finnish should be discussed in the future, since now the course is only in English, but most of the participants who fulfilled the first research questionnaire were from Finland, which indicated that international students were not that interested in a fitness course like this. However, the reason to the small number of foreign participants might also be the fact that foreign students do not pay that much attention to KAMK Sports' emails or consume their services even though they are usually also offered in English. In other words, when the questionnaire was sent to the students via KAMK Sports' email, several foreign students might not have even opened the email. Moreover, the questionnaire was sent in May, during which the second-year sports students from the English program are usually still doing their practical training, which could also be one reason for the small number of foreign participants.

Lastly, since there were no similar fitness courses organized anywhere else before this course, it would be nice to have this kind of courses also in other schools providing e.g. the degree of sports and leisure management or other similar degrees. Fitness field has grown and will continue to grow remarkably also in the future, and there are more and more people getting interested in starting their own fitness career and willing to get more information about competitive fitness. Since the number of competitive fitness athletes is continuously increasing, also the need of professionals in the field is increasing since they are needed to help people all around the world to reach their fitness goals and chase their dreams of becoming professional fitness athletes.

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APPENDICES

Questionnaire for KAMK Sports' new fitness course / Kysely KAMK Sportsin uutta fitness-kurssia varten

In Finnish below!

I'm a third-year sports student from the English program, and this questionnaire is a part of the planning process of KAMK Sports' new fitness course, which is also the topic of my thesis. The course will be planned and implemented as a service product, and for this reason also the customers (i.e. the students of KAMK) need to be included in the planning process. In other words, the idea of this questionnaire is that those students who would be interested in participating the course can have an impact on e.g. the course contents, teaching and studying methods as well as how much each of the topics and themes of the course will be discussed during the course.

The fitness course will focus on different competitive fitness disciplines (such as bikini fitness, wellness fitness, men's physique, bodybuilding etc.) in Finland, in addition to how the athletes of these disciplines e.g. train, eat, prepare for the competition, and use additional supplements, as well as what happens in the actual competition and how to get started with your own fitness career. The course suits for both, those who already have some experience from e.g. gym training and maybe even some fitness discipline as well as for those who might be just getting started with their gym hobbies or fitness careers or would be interested to start one.

You do not have to be a sports student to participate to the course, but only sports students and other students that can include the course to their studies might also get some free choice study credits from the course.

Suomeksi:

Olen kolmannen vuoden liikunnanohjaajaopiskelija englanninkielisestä koulutusohjelmasta, ja tämä kyselytutkimus on osa KAMK Sportsin uuden fitness-kurssin, ja samalla myös minun opinnäytetyöni, suunnitteluprosessia. Kurssi tullaan suunnittelemaan ja toteuttamaan palvelutuotteena, ja tästä johtuen myös tuotteen asiakkaat tulee sisällyttää jollain tavalla suunnitteluprosessiin. Toisin sanoen, tämän

kyselytutkimuksen ideana on, että ne opiskelijat, jotka olisivat kiinnostuneita osallistumaan kurssille, pääsevät vaikuttamaan esim. kurssisisältöihin, opetus- ja opiskelutekniikoihin sekä siihen, kuinka paljon kuhunkin käsiteltävään teemaan ja aiheeseen syvennyttään kurssin aikana.

Kurssi tulee keskittymään Suomessa kilpailtaviin fitness-lajeihin (kuten bikini fitness, wellness fitness, men's physique, bodybuilding jne.) sekä siihen, kuinka fitness-kilpailijat mm. treenavat, syövät, valmistautuvat kilpailuihin ja käyttävät lisäravinteita, sekä mitä tapahtuu itse kilpailuissa ja kuinka päästä alkuun oman fitness-uransa kanssa. Kurssi sopii sekä niille, joilla on jo kokemusta esim. kuntosaliharjoittelusta ja mahdollisesti jopa jostain fitness-lajista, sekä niille jotka ovat vasta pääsemässä alkuun kuntosaliharrastuksensa tai fitness-uransa kanssa tai olisivat kiinnostuneita aloittamaan sellaisen.

Sinun ei tarvitse olla liikunnanohjaajaopiskelija osallistuaksesi kurssille, mutta vain liikunnanohjaajaopiskelijat ja muut opiskelijat, jotka voivat sisällyttää kurssin opintoihinsa, saavat kurssista mahdollisesti myös vapaavalintaisia opintopisteitä.

1) Would you be interested in participating a fitness course like this?

- Yes
- No

2) Are you studying sports or some other (and what) field?

- Sports
- Other

3) Are you from Finland or some other (and what) country?

- Finland
- Other

4) Which ones of the following topics/themes you find the most interesting and/or relevant for yourself to be discussed during the course (you can choose multiple answers)?

- Nutrition in general for fitness competitor
- Additional supplements (not steroids)
- Strength training in fitness disciplines
- Aerobic training in fitness disciplines

- Competition diet
- Bikini fitness
- Body fitness
- Wellness fitness
- Women's fitness
- Women's physique
- Men's physique
- Classic bodybuilding
- Bodybuilding
- Posing in different fitness disciplines
- Competition rules
- How to get started with your own fitness career

5) Which ones of the following teaching and studying methods you would prefer during the course (you can choose multiple answers)?

- Lectures given by the lecturer
- Training sessions at the gym (trying out different kinds of workouts and training methods)
- Posing practices (practicing how to pose onstage in different fitness disciplines)
- Group/individual assignments and exercises during the lectures and other contact lessons
- Group/individual assignments during your own time
- Tests/exams
- Quizzes (tietovisat)
- Playful competitions (leikkimieliset kilpailut)
- Other

6) Do you have any previous experience or knowledge from strength/gym training?

- Yes
- No

7) Do you have any previous experience or knowledge from competitive fitness?

- Yes
- No

8) At what time(s) of the day would you prefer the lectures and other contact sessions to be (you can choose multiple answers)?

- In the morning (at some time between 8.00 and 11.00)
- At some time in the noon (at some time between 11.00 and 13.00)
- In the afternoon (at some time between 13.00 and 17.00)
- In the evening (at some time between 17.00 and 19.00)
- Doesn't matter

NEW FITNESS COURSE!

Interested in getting more information about competitive fitness and maybe even starting your own fitness career but don't know where to start?

Here's a fitness course just for You!

What: A course focusing on different fitness disciplines (in Finland) as well as the things needed to become a fitness competitor, including both theoretical and practical contact lessons

Organized by: KAMK Sports

Language: English

When: Spring 2019

Duration: 1-2 months

Where: At KAMK

Who can join: The first **30** students who're interested!
(the students who can include the course to their studies will also get
2 free choice study credits from the course)



**If you want to join, send an email to KAMK Sports by
30.11., including your name and group code**



The Preliminary Structure and Contents of the Course

Week	Topic	Contents	Time used	Premises needed
1	Introduction to the course	<ul style="list-style-type: none"> ○ Lecture: Going through the course contents 	30-45 min	Classroom
	Different fitness disciplines in Finland	<ul style="list-style-type: none"> ○ Lecture: Overview on the different fitness disciplines <ul style="list-style-type: none"> ➤ Requirements of each discipline ➤ Rules ○ Playful competition: Quiz in teams 	3-4 h	Classroom
2	Strength training in Fitness disciplines	<ul style="list-style-type: none"> ○ Lecture: Basics of strength training in fitness disciplines <ul style="list-style-type: none"> ➤ The goal of strength training ➤ How it happens in practice ○ Group task/homework: Planning a training session for certain muscle groups (done on a ready-made template) 	2 h	Classroom
	Training session at the gym	<ul style="list-style-type: none"> ○ Practical session: Trying out the training sessions planned in practice 	2 h	T12 Gym
3	Special training techniques	<ul style="list-style-type: none"> ○ Lecture: 8 different special training techniques ○ Group task/Homework: Adding special training techniques to the training session planned previously 	2 h	Classroom
		<ul style="list-style-type: none"> ○ Practical session: Trying out the training plans with the special training techniques 	2 h	T12 Gym
4	Fitness competitor's diet	<ul style="list-style-type: none"> ○ Lecture: Fitness competitor's diet in general <ul style="list-style-type: none"> ➤ The importance of correct diet ➤ Different macronutrients and their intake ○ Task: Calculating your daily energy intake requirement and the need of different macronutrients ○ Homework: Food diary 	3 h	Classroom
	Additional supplements and their intake	<ul style="list-style-type: none"> ○ Lecture: Some of the most common additional supplements <ul style="list-style-type: none"> ➤ The idea, benefits and downsides of additional supplements ➤ Different additional supplements and their intake ➤ Tips for buying additional supplements ○ Quiz related to additional supplements in teams of 3-5 persons 	2 h	Classroom

5	Competition diet and aerobic exercise	<ul style="list-style-type: none"> ○ Lecture: The basics of competition diet ○ The basics of aerobic exercise <ul style="list-style-type: none"> ➤ Aerobic exercise in fitness disciplines ➤ The importance of combining competition diet with enough aerobic exercise ○ Individual task/homework: Plan yourself a progressive competition diet from the basis of your food diary as well as a progressive plan for aerobic exercise 	3 h	Classroom
	Posing in different fitness disciplines (session 1)	<ul style="list-style-type: none"> ○ Lecture: The poses, I-walking and routines in different fitness disciplines ○ Group task: Watch videos from different fitness competitions and already start to practice the poses in different disciplines as well as the I-walking 	2 h	Classroom
6	Posing in different fitness disciplines (session 2)	<ul style="list-style-type: none"> ○ Practical session: Trying out how to pose in different fitness disciplines ○ Playful competition in teams: KAMK Fitness Expo 	2-3 h	T12 Musical exercise room
	How to get started with your own fitness career + Registration rules + The closure of the course	<ul style="list-style-type: none"> ○ Lecture: How to find a perfect coach just for you <ul style="list-style-type: none"> ➤ What you should consider when searching for the coaches ➤ How the coaching and training process goes until the competition date + General registration rules for the competitions ○ The closure of the course <ul style="list-style-type: none"> ➤ Reminding about fulfilling the course feedback questionnaire 	2 h	Classroom

Feedback questionnaire for the participants of KAMK Sports' Fitness Course

1. What did you like the most about the fitness course?

2. What did you like the least?

3. What were the successes of the course?

4. Was there something you think could still be developed/changed/added? If yes, what?

5. How do you feel like the course fulfilled your needs and/or wishes? For example, do you feel like the topics you found the most interesting/relevant for you were discussed enough, did the different teaching and studying/learning methods used help you to learn the topics etc.?

6. Any other feedback about the course?