

# **PERCEPTIONS OF SPORT INJURIES OF YOUNG ELITE SWIMMERS**

**Mari Lehtinen**

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Department of Sport Sciences  
University of Jyväskylä

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## ABSTRACT

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Sport injuries occur at all levels of sport. Sport injury can limit or end athlete's career. It is important to find out ways how sport psychology can prevent and treat sport injuries. This can be done for example, by having impacts on mental and physical capabilities of athletes. Aim was to study rehabilitation process of injured swimmers according to the sport psychology point of view. The aim was to study experiences of elite swimmers during recovery process. Secondly, this study helped to describe and understand possible career ending factors after an injury among young elite swimmers. Study was concluded by interviewing five swimmers from a swimming team. Thematic interviews were done in one week period in Jyväskylä. Interviews were transcribed and analyzed by comparing them with other interviews.

Main themes in this study were career before injury, psychological changes during injury, resources of rehabilitation and time after injury. Core themes were achievements, reactions to injury, rehabilitation and motivation. Themes in this study were divided into core themes, themes and subthemes. Results suggest that swimmers wish to get more medical and psychological attention after an injury and during a rehabilitation process. Most swimmers had only medical help even if they felt they could use motivational help during rehabilitation process. Stressful situation occur while trying to reach pre injury level. Findings of this research support development for lightened and modified exercises, in order to avoid shoulder abrasion and loss of motivation among young elite swimmers. Advantageously, literature review disclosed multidisciplinary role of a coach as a less studied field, thus creating need for further research.

**Keywords:** Swimming, Injury, Rehabilitation, Physiotherapy, Motivation, Coaching, Re-entry to sport, Multidisciplinary role

## 1. INTRODUCTION

Sports injuries result from acute trauma or repetitive stress associated with athletic activities. In many cases, these types of injuries are due to overuse of a part of the body when participating in a certain activity (Renström et al. 2002, 15 -17).

Additionally sport injuries occur while participating in organized sports, competitions, training sessions, or organized fitness activities. Common high injury risk sports are, for example football, soccer, basketball, cricket, volleyball, skiing, tennis as well as contact sports as a whole (Frisch et al. 2009). Sports injuries can affect bones or soft tissue (ligaments, muscles, tendons). Causes to sport injuries vary greatly. Accidents, poor training practices or improper gear can cause injuries most often. Some people get hurt because they are not in shape or their diet is not good enough. Not warming up or stretching enough can also lead to injuries (Mero, Nummela, Keskinen & Häkkinen 1997, 251 -253).

If warming up and stretching is not practiced properly, injuries can happen and lead to a rehabilitation and recovery process. Injuries happen in all levels of sports, elite level and beginners. Psychological skills are important during training and competition. Emotional reactions appear as a cycle (Chang-Y. Jung-Huei & Tsung-Min, 2010), which is divided into different parts. Distress reflects effect on injury on emotional equilibrium including anxiety, depression and fear. Denial triggers events creating psychological tension. It is important to determine coping skills including moving beyond passive acceptance and proactive challenging knowledge and skills. Emotional response to loss and threat is a continuum from normal reaction to profound lifestyle disruption. The ability to remain injury free is linked to athletic success (Heil 2000).

Swimming is one of the safest sports. Still there are few injuries. One of the biggest injury types is shoulder injuries and other upper part chronic overuse injuries. In study of Ristolainen et. al. (2009) result shows, that swimmers overuse injuries are mostly located in shoulder region, and there are no gender differences. Reason for this may be training intensity. Competitive swimmers are training 8-10 times per week (Ristolainen et al. 2009).

Rehabilitation is always a process that is mentally and physically difficult or at least unfamiliar. This can lead to finishing of practicing sports. Thus, it is important to treat athletes mental recovering as well as physical injury. If either mental or physical aspects are not treated well enough, it can lead to either finishing career or other injuries later on. Rehabilitation differs, based on injury type, pain level, physical symptoms and athlete's mental state. There is need for an immediate rehabilitation after an injury in terms of physical and psychological first aid. There are different choices of physical and mental rehabilitation. Physical rehabilitation can be made by physiotherapist, manual or machine therapy. Mental rehabilitation is often by imagery (Renström et al. 2002. 119 -120,163 -168).

Severity of injuries varies from bruises and minor cuts into spinal cord damage leading to paralysis; these described injuries can lead to pauses or even forces an athlete to stop his career. Medical expenses can vary from type of injury, sport and country of an athlete. It is important for an athlete to acknowledge possible risks. This will help an athlete proceeding in right way and take pre-emptive actions. Though, it can take long time to learn right exercise technique and proper conditions (Mero et al. 2007, 456). It is easier to prevent injuries than treat them.

From mental and psychological point of view, injuries are always difficult to take care of. Humans are combination of psychosocial and physical factors. It is essential to understand psychological reasons and its effects on every sport injury. Every case is different and people react differently. Thus, it is important to understand this phenomena and behavioral reactions of people (Renström et al. 2002.19 -49). Role of psychology is as important as physical therapy is. Both can be combined by achieving best possible results. In research, there is strong support for the cognitive appraisal perspective (Brewer & Tripp 2005, 319 -329).

## 2. SPORT INJURIES

During exercising and sports activities, there is always a risk for injuries. Sport injuries are defined as injuries that happen during sports. Injuries differ from field of sports and an athlete. Types of injury and grade of severity, will lead to various kind of rehabilitation methods (Mero 2007 454 -456). Coaching is in key element to prevent athlete's injury. Coach can teach useful methods for an athlete of injury prevention. Outer conditions for injury prevention are proper equipment, hygiene and training circumstances. Inner conditions are food and psychological training. Different sport types have their own injuries and individual ways for prevention. (Renström et al. 2002.19 -49)

Sport injuries can affect on several levels of well-being. These are physical, emotional and social well-being. Physical well-being includes pain, rehabilitation, physical changes of athletes' body and either permanent or temporary physical restrictions. Emotional well-being includes feelings of loss and grief, trauma and rehabilitation. Social well-being includes dependence of others, separation from family and friends, new relationships and maybe loss of social roles. Self-concept includes loss of sense of control, dealing with altered self-image, threat to important life goals and values, as well as necessity for decision making under stress (Russel 2011).

According to Glazer (2009) there are always both psychological and physiological aspects after sport injuries. 5-19% of injured athletes report psychological distress, which is similar than treating mental health problems which occur after injury. If athletes return to sport before they are ready, that can lead to anxiety, depression, re-injury or decrease of performance (Glazer 2009, 185-189). Study of Ivarsson (2008) is representing four significant predictors explaining sport injuries. These predictors are life event stress, somatic trait anxiety, mistrust and negative coping. Result show that these factors combined can explain 23% of injuries occurred in the study (Ivarsson 2008, 1 -6, 11 -15).

## 2.1 Definition of injuries

In year 1998 William and Andersen created the model of injury antecedents. That is a stress-based model of athletic injury. Model includes issues related to injury. These are personality of an athlete, history of stressors and coping resources. Stress response includes cognitive appraisal and physiological and attentional changes. Potential stressful athletic situation is included in the model as well (Andersen & Williams 2007). Fuller et al. states that injury is “Any physical complaint sustained by a player that results from a match or training irrespective of the need for medical attention or time loss from football activities. An injury that results in a player receiving medical attention is referred to as a medical-attention injury and an injury that results in a player being unable to take a full part in future football training or match play as a time-loss injury” (Fuller et al. 2006).

According to study of Udry and Andersen, it is important to examine different skills. By examining the stress response, history of stressors, personality, coping resources and interventions or preventions it is easier to see, what are possible factors and underlying mechanisms for the relationships between stress and athletic injury. Based on this model, there is relationship between muscle tension, stress, history of stressors and life events. Also based on this model, there are some handful methods to prevent injuries. These are reducing stress reactivity throughout the cognitive appraisal of potentially stressful events. Also by dampening the physiological activation and attention disruptions associated with the stress response. Injury prevention can be progressive muscle relaxation, stress inoculation training or mental skills training (Udry & Andersen 2008).

With every type of sport, there are different kinds of injuries. For example, swimmers can have ear infections more often than other athletes. Baseball players have often shoulder problems (Nykänen 1987, 130 -148). Sport injuries are injuries that most commonly occur during sports or exercise. Some sports injuries result from accidents, others are due to poor training practices, improper equipment, and lack of conditioning, insufficient warm up and stretching. Common injuries are different from sports to sports, like karate, handball, American football, judo, ice



hockey and basketball. Sports can vary between countries and this is creating different injuries (Ristolainen et al. 2010). Also injuries can be different among athletes and some sports are more vulnerable to injuries than the others. If an athlete recognizes risks for certain injury types, he can proactively avoid possible creation of injury. This is not the only method to prevent injuries, but it can at least lower possibility to get injured in specific sport types (Mero et al. 1997, 251 -253).

Growth factor has to be taken into consideration, when discussing about possibility and prevention of sport injuries. Growing continues until 17-18 years old (girls) and until 20 years old (boys) (Vuori, Taimela & Kujala 2005, 584 -599). This is important factor to acknowledge, while designing training programs. There are certain methods in order to prevent sport injuries. One of these methods is to control and limit total workload of exercises, based on individual abilities. Another method is to use right and safe equipments and to follow predefined safety procedures before any exercise. Also, warming up and stretching are key factors for every workout (Vuori, Taimela & Kujala 2005, 584 -599).

## 2.2 Physical factors causing sport injuries

Physical injuries are caused by different forces, thus affecting in different body parts. Injuries and rehabilitation differs based on sports and athletes. Level of injury is always different between athletes, thus there can be several methods to cope with injuries. Treatment has to be based on level of injury and combination of psychosocial and physical factors (Mero 2007, 454- 456). Physical injuries happen often due to muscle imbalance issues, high speed collisions, overtraining or after physical fatigue (Weinberg & Gould 2007, 448 -449).

In the study of sport identity and sport participation, former has been explained to be important issue (Lundberg, Taniguchi, McCormick & Tibbs 2011). This is due to individual and cultural attitudes can vary a lot. Sport identity and participation differs in between eastern and western hemisphere. Personal goals and handling different situations at special events or during practice tours abroad can create cultural misunderstandings. Often competitions are against athletes from other

cultures, who have been training and living with their culture limits and regulations. Thus, athletes respecting each others from different cultural backgrounds are important. Orientation to injury and recovery from trauma directly relates to cultural backgrounds, consisting of local regulations of an athlete and how he has been taught to act in various situations. An athlete can be either task or ego oriented and this is affecting for recovery results from any injury. When all these cultural, ethical and other issues are combined together, the result of an athlete to handle an injury, coming from different background, may be difficult to understand to others (Patrick, Cheung, Lydia 2007, 5, 66 -81).

### 2.3 Psychological factors causing sport injuries

Besides physical factors there are always psychological factors included. These factors are for example stress level and certain predisposing attitudes (Weinberg & Gould 2007, 448 -449). According to model of stress and athletic injury (Andersen & Williams 1988) sport participants might experience stressful situations such as a demanding practice or crucial competition. These include their history of stressors (i.e. life event stress, daily hassles, past injury history), personality characteristics (i.e., hardiness, locus of control, sense of coherence, competitive trait anxiety, achievement motivation, sensation seeking), and coping resources (i.e., general coping behaviors, social support, stress management and mental skills, and medication) contribute interactively or in isolation to the stress response. The central hypothesis of the model is that individuals with a history of many stressors, personality characteristics that tend to exacerbate the stress response, and few coping resources will when placed in a stressful situation, appraise the situation as more stressful and exhibit greater physiological activation and attentional disruptions compared to individuals with the opposite psychosocial profile (Andersen & Williams 1988). Self-determination theory (SDT) is a macro-theory of human motivation, personality development and well-being. Focus of the theory is on volitional or self-determined behavior, and the social and cultural conditions promoting it (Ryan & Deci 2000).

One way to reduce risk of injury is to acknowledge psychological factors associated with injuries. Psychological reactions to different situations are individual and these can be for example fear of re-injury, feelings of hopes and dreams being shattered, lack of attention, isolation, negative relationships or depression (Maffulli & Baxter-Jones 1995). These issues are to be taken seriously, and with psychological help these can be avoided and treated. Former issues combined with physical symptoms, like pain, can create severe complications. These matters can be treated with skilled personnel in physical and psychological rehabilitation (Russel & Laurier 2011).

Stress management technique is important matter, especially during rehabilitation process. For bystanders, it may be sometimes difficult to understand an injured athlete (Edwards & Beale 2011). There are so many issues going on in athlete's life at the moment of injury, so it is better to find out what those feelings are. It is important to know that after an injury, an athlete is not worthless. An athlete have an opportunity to return to his place after a period of recovery –if he experience the returning plan is realizable and worth of try. If an athlete has a fear that his place is given permanently to someone else, circumstances for his recovery process may be altered. This fear can be removed by promising to an athlete, that he can come back anytime –for sure. Thus, emotions of an athlete can vary a lot. Below is described five stage grieving response process that athletes goes thru during his injury recovery process. These stages are, denial, anger, bargaining, depression and acceptance and reorganization. There are also three general categories of emotional responses. These are injury relevant information processing, emotional upheaval and reactive behavior and positive outlook and coping. Other reactions are identity loss, fear and anxiety, lack of confidence and performance decrements (Weinberg & Gould 2007, 448 -455).

Fear of re-injury, anxiety and questioning of athletes' personal abilities to recover are key elements after an injury and during rehabilitation process. One of the major issues with injuries is lack of motivation on a part of an injured athlete, resulting from the symptom of emotional distress (Weinberg & Gould 2007, 448 -458). Lynch says in his article in 1988 that increase of sport injuries are often caused by psychological emotions. These are for example stress, panic, anxiety, tension and

fear (Lynch 1988, 161 -167).

There are different signs of poor adjustment to an injury. These are for example, rapid mood swing, withdrawal, obsessions or grief. Grief is one of the first feelings which athletes have right after injury. Others symptoms are denial, anger bargaining, depression, acceptance and reorganization. Shock is both a physical and a mental issue. If this is not treated correctly, situation can lead to worse and stronger psychological illnesses may occur. One of the biggest emotions is the loss of identity, which can happen often after an injury. This can lead to bargaining situation or rationalizing to avoid the reality of the situation. There are other reactions to an injury that can be caused by having sufficient time to worry and psychological stress (Weinberg & Gould 2007, 448 -458).

Adjusting to an injury is one of the most important issues during rehabilitation of an injured athlete. Adjustment process can be difficult, though is one of the key factors to beginning the healing process mentally and physically. Emotional reactions to injury are as important as physical reactions are. Physical care and psychological care goes hand in hand and both are equally important. There can be setbacks and other problems during rehabilitation, so psychological skills are very important. Moreover, social support and coping skills are important during and after rehabilitation process. Most athletes can have their individual injury treatment and a recovery plan. That provides emotional support, physical goals and realistic, optimistic and positive goals (Weinberg & Gould 2007 448- 458).

Most often people think a recovery process only as a surgical treatment and a physical therapy. This is only part of injury period. There is always several feelings and psychological care given to an athlete. This stage can be the most important part of the recovery process. This is important in sight of athlete's come-back to reach to the same level in sports –before the injury occurred. If athlete's body is ready for a come-back, but his mind is not, he cannot manage and keep up his performance level (Tracey 2008).

### 3. WELL-BEING OF ATHLETES

In order to succeed, it can be advisable for an athlete to dedicate their lives to the sport. This does not include only training and competing. Important factors are also nutrition, psychological preparation, technical instructions and physical training year around (Dolan, Houston & Martin 2011). It is challenging to know what the proper amount of training is. Not too little, in order to establish continuous improvement for skills and physical abilities, and not too much in order to avoid injuries and overtraining (Goss 1994). There are several indications that affects on injury and stress. An individual's personality and history of stressors are affecting together with coping resources to stress response. A stress response includes cognitive appraisals and physiological intentional changes. These are also affected by interventions.

The personality of an athlete together with coping resources can be developed. Potential stressful athletic situations, for example personal concerns, or other concerns caused by weather or other issues leading to injury can be developed by affecting to stress response. This model is the good example how potential injury can be avoided. When injury happens, it is good to know what caused it and what potential situations led into injury. When this information is available, it is easier to treat and prevent further injury. Stress related injuries can happen by mental or physical causes. Learning to cope with stress is essential factor in order to release negative symptoms and to cover them with positive symptoms (Crust 2002).

In terms of psychological coaching, essential factors for athletes are combining practice and life outside of sports, motivation, setting of milestones and goals and to be able to relax physically and mentally. Also, it is important to be continuously ready to practice and compete. Every sport has its own styles to practice and compete. An athlete has to be able to manage with these unique needs. These needs and requirements are physical and mental shape, duration of performance, repeats, recovering and being able to do his best during that short moment of performance. Managing with other athletes as competitors is important. If an athlete cannot manage pressure from other athletes, he cannot win and do his best. To improve and gain better results is important as a milestone for an athlete. Concentration is

extremely sensitive and needs good psychological skills (Chang-Y. Jung-Huei & Tsung-Min 2010).

There are always external factors interrupting concentration and for most of these cases athletes can prepare beforehand. These factors can be media and other people actively critiquing or asking explanations after the performance. Also, there can be pre-estimated interruptions like awarding ceremonies. Sometimes concentration can be difficult to handle. This can create increased pressure for a next event or a performance. Earlier mentioned can cause symptoms to athlete's motivation to continue his career. An athlete has to learn tactics how to deal with media and other psychological stress (O'Brien 2000). Physical and mental risk of injury differs a lot with different kind of sports and athletes. (Mero et al. 2007, 215 -219).

An individual athlete can create psychologically optimal conditions. All athletes are not in elite level, thus training conditions can be different. Psychologically athletes' own thoughts and ideas are as important as training with coach and other athletes. An athlete can have milestones in between bigger goals in order to be well motivated all the time. Training has to be in balance all the time. There are other issues to deal with an athlete and support group surrounding him. These support groups are family, friends and other athletes and coach. Also financial issues are in major role. When an athlete doesn't have to worry about money, he can concentrate better to his goals. Training has to be of high quality and well planned ahead. There can be proper amount of training to be sure that there are continuous improvements, even small.

It is important to have methods for an athlete to be able to see his results and how he has been improving –or not. It is essential for an athlete to see concrete milestones. This helps an athlete to understand correlation for the coaching strategy and can keep him motivated for the ultimate goal (Milton 2010). Social relations are important, because life is not only competing or practicing. If there is not enough support from family, friends or other possible people, an athlete cannot reach incrementally better results. It is good to improve psychological skills to manage better with social life and sponsors. This will help an athlete to improve training

skills more intensively and better in psychological aspect (Mero et al. 2007, 219 - 221).

Research of San Jose show, that injury is a very traumatic event and causes often negative emotions. Psychological adjustment is critical and varies every injury case. Psychological process depends on injury type. Psychological recovery varies based on injury type, like overuse or acute type of injuries. Males seem to have different injuries than females. Also males tend to develop more positional identities meaning fear of intimacy, than females have more fear of separation. High stress can increase possibility of injury or at least increase fear of injury and re-injury (San Jose 2003, 1, 434 -459).

Based on article of Young- Eun Noh et al. 2005 coping skills are important, thus athletes can have their own coping skills, even before an injury. Development of coping skills is always a process that takes time and patience –not to forget knowledge. Without coping skills it is more difficult to face and cope with an injury. Mental and physical stress is easier with already existing coping skills. Social support is creating prerequisites for surviving skills, thus being important factor during rehabilitation and in everyday life. Social support can be anything that athletes have and can be from any social network (Young- Eun Noh et al. 2005, 3, 79 -90).

Depending on an injury type and other related factors, it is easier to see athlete's injury in a bigger picture: time before, during and after the injury. Although it is important to acknowledge that stress does not exist outside the individual, thus not all people are responding negatively to potentially stressful situations (Mitchell 2011). Reasons why stress can be part of injury is that with stressful situations an athlete might have narrowing and excessive muscular tension, which are thought to increase the chances of sustaining an injury. Stress as itself is not always reason to an injury. Attitudes of an athlete might predispose him to an injury. If an athlete has wrong attitudes towards his career and sport, risk of injury might increase (Stress and injury model).

There is a lack of theoretical models and frameworks explaining what psychosocial factors are associated with sport injury even if there are plenty of different studies. There is no right or wrong model –all models are from different perspectives (Andersen & Williams 2007). There can be relationship between athletic injuries and psychological factors as essentially stress-related. With some athletes psychological aspects can be totally forgotten, leading to bad results and possible injuries. (Mero et al. 2007, 215 -239).

### 3.1 Stress Management

There are different stages of stress. First stage is an alarm face, when human body is showing, whether an individual can either choose fight or run mode from the source of stress. Second stage is adapting, when human body is trying to adapt to new stressful situation. Third face is fatigue when body functions are decreasing, because of the overload. Better results can be gained, when stressors can be reduced in any part as soon as possible (Andersen & Williams 1988). Positive stress leads to good results, while negative stress leads to failure or even injuries. Stress can be defined as a biological term referring to the consequences of the failure of a human or animal body to respond appropriately to emotional or physical threats to the organism, whether actual or imagined. Every human's reaction to stress is unique and different to the others. Positive stress leads to good outcomes like concentration, optimal vitality level and euphoria. Negative stress leads to harmful feelings, low concentration level, somatic problems, irritability and restless (Andersen & Williams 1988).

Most often stress is caused by different positive and negative stress reactions. In terms of athletes, these negative reactions are harmful feelings, failure of concentration, somatic problems and squeamishness. Also weakness is negative stress factor. Positive stress factors in terms of athletes are good feeling and good concentration, optimal vitality level and feeling strength. These feelings are felt at least during competition and during trainings. There are different ways to interpret these feelings. One way is to assess and check abilities and challenges. Also earlier



experiences are in major role, because present issues are shaped from earlier issues. Media and publicity affects on people at some at some level (Mero et al. 2007, 229 - 231).

In today's society people tend to be active all the time. Trend in economy is, if there is possibility to do things cheaper or with less people, they will implement that strategy. That causes stress to people to lose their jobs. Within sports, there are stress factors like a need to be a better athlete. Stress can be also good thing, not always negative as it sounds. Without stress, people cannot get as much done as with little amount of stress. This positive effect of stress is called eustress. There is only a short line between good amount of stress and too much of it. A stressed person eats, smokes and drinks too much while they don't or can't exercise enough.

People react to stress factors differently and with different symptoms, either mentally or physically. Recognizing stress factors is a first step to recover from that. Sometimes it is difficult to see when person is too stressed. Ways to manage with stress is to have less work, learn to say no, enjoy life by doing something fun, share responsibilities, do proper amount of workouts and take care with all aspects. Relaxation is one of the main ways to reduce stress. Relaxing balances and opens mind to new thoughts, increases flexibility, increases blood circulation and helps to reach balanced health and fitness regime. Music and workout are the best ways to relax (Sandlund & Norlander, 2000).

There are different terms related to motivation and stress. Arousal is intensity dimensions of motivation at a particular moment. That is not automatically related either positive or negative event. Anxiety is a negative term referred to nervousness, worry and apprehension, associated with arousal of the body. There are cognitive and somatic anxiety components, depending on the degree of physical activation perceived. State anxiety refers to ever-changing mood component. That is more formal emotional state. Stress can be either positive or negative. Stress occurs when there is imbalance between mental and physical demands. There are different scales to measure stress level. One scale is the four-stage stress process. That includes environmental demands, perception of demands, stress response and behavioural

consequences. After stress, uncertainty is a second major situational source of stress. Also self esteem affects on stress level (Weinberg & Gould 2007, 78 -86).

### 3.2 Motivation

Motivation is in a key role when elite athletes are returning to sports after injury. There is a relationship between motivation of an athlete and returning to a sport. Psychological outcomes of returning to a sport are related to level of motivation. With external motivation, an athlete feels desire to come back to sports, but there might be external pressure from a coach or other people. An athlete might feel that he is letting his team down, if he won't return. With internal motivation, an athlete has own strong feelings to return and motives to continue his career. An athlete is able to return to his pre injury level with intrinsic motivation. Athletes who desire to learn about his injury and focus on rehabilitation and returning to sports are intrinsically motivated (Podlog & Eklund 2005; Ninedek & Kolt 2000).

Motivation is in a key role during rehabilitation process. Sport psychologist can use goal setting, relaxation, imagery, positive self-talk and social support groups to enhance athletes' motivation during rehabilitation process. Combining all these strategies, motivation of an athlete can be high through rehabilitation process. It is difficult for an athlete to keep up motivation alone and without further help. Communication is necessary with support group. Especially in youth sports there are several group of people that has to be able to work together in positive motivation. Parents, team leaders and athletes can be able to work with positive atmosphere and good motivation to get good results (Wiese & Weise 1987; Keegan, Spray, Harwood, & Lavallee 2010).

Motivation can be divided into intrinsic and extrinsic motivation as well as task and ego involvement. Individual differences in goal perspective can be measured. There are few issues related to sport behavior and goal perspective. These are effort exerted, task choice, performance and persistence (Duda 2007, 78 -93). Intrinsic motivation means a person doing activity for himself and the inner pleasure by doing certain activities. Extrinsic motivation means behavior, where a goal of a

certain activity extends beyond goals of persons' own activity. There is also third type of motivation called amotivation. This construct is important to consider to fully understanding human behavior. Person is amotivated when he does not perceive contingencies between outcomes and own action. In this case they are not motivated either intrinsic or extrinsically, but they become non motivated (Vallerand & Perreault 2007, 155 -161).

Exercise and sporting can be described as 'desire to act voluntarily into activities during a free time'. Motivation can be described as 'an element to let person to do the same activity time after time'. Motivation can stay or diminish as time goes by. Among children, adults have a big affect to motivation of their children. If parents can offer positive motivation, children are more likely to keep doing sports. If parents are not willing to support sports of their children, their motivation is more likely to diminish. Motives on participation in sports can be re-checked after once in a while. Participation among young people and adults can vary. Thus, with strong motivation it is easier to do sports (Biddle 2007, 378 - 387).

According to Weinberg and Gould motivation is critical to the success. It is important to have ability to motivate people. Motivation can be defined as a direction and intensity of effort. Sport psychologist can see motivation from several ways. These can be for example achievement motivation, motivation in the form of competitive stress, as well as intrinsic and extrinsic motivation. Motivation can be divided into two components, direction of effort and intensity of effort. These refer to whether an individual seeks out, approaches or is attracted to certain situations and how much effort a person puts forth in a particular situation. External and internal situations are always affecting on motivation either positive or negative way. Moreover, personal characteristics are widely affecting on persons motivation (Weinberg & Gould 2007, 51 -53).

Motivation can be divided into three approaches. Motivation can be developed and learned by using different strategies. Participant centered view: Officially called as a trait-centered view, means motivated behavior being primarily a function of individual characteristics. This is also seen by personal needs and motivated

behavior. Opposite to the former is situational-centered orientation. In this case motivation level is determined mostly by situation. Situation influences motivation. Also, this approach analyzes how motivated person survives in a negative environment. One way to understand thematic of motivation is to consider both the person and the situation –and how these two interact. (Weinberg & Gould 2007, 53 - 54).

There are several methods to build motivation. These are considering both situation and trait techniques in motivating people, by analyzing and responding to interaction of personal and situational characteristics. Motivation changes, thus it is necessary to monitor motives of people. It is important to understand people's multiple motives for involvement. Motives among athletes can vary, thus examining these variables can help a lot to improve and understand motivation. For example motives can be based on cultural, monetary or even narcissistic values. It is important to monitor motives by observing. Observing is said to be more effective method than asking (Blair 2010).

Thus, it is important to enhance motivation by changing environment. Influencing motivation can be difficult, but it is good to learn it. Motivation can be either realistic or unrealistic and this has direct correlation to results. Strong motivation can be described as persons' efforts to a certain task, achievement excellence, overcoming obstacles, to perform better than others and by taking pride in exercising as a talent. Motivation is always part of personal and situational factors and resultant tendencies. Also emotional reactions and achievement behavior is important (Weinberg & Gould 2007, 54 -75).

There is great need to understand more about motivation. There are certain theories to base knowledge on current information about what motivation is. There are major roles of parents, coaches and peers among athletes. Significantly, others can affect on motivation either positive or negative way. Sport commitment consists of enjoyment, involving alternatives, personal investments, social constraints and involvement opportunities (Weiss & Amorose 2008, 116, 123 -128, 147 -155). According to Hanin (2007), emotions are important to understand especially in elite

level. Thus, it is essential to have performance patterns in sport setting. Hanin states that relationship between emotions and motivation can be examined, so their interactive effect could be more explained (Hanin 2007, 55 -68).

High motivation is an athlete's goal after an injury. Without strong motivation, it is almost impossible to be able to continue training and to make desired comeback (Hamson-Utley 2008). There are several methods to reach a proper level of motivation. These methods are relaxing, balancing training, social life and avoiding stress factors. There can be virtue characteristics of an athlete, which are preferable to maintain. When acknowledged, these virtues can help athletes to reach and sustain high motivation. These are high self-confidence, sustainability, relentless, bravery, managing well disappointments, creativity, ability to relax, ability to calm down and good concentration.

Support group is important to an athlete during rehabilitation process. An individual athlete can have his own support group and that can be formed from several groups of people. These groups are family, relatives, friends, coach, doctor, physiotherapist, sport psychologist or other athletes. An athlete is more motivated when he is task oriented with good self esteem. When an athlete is oriented only to himself, he can often be too hard on himself and pushing himself too much. Though, positive of former is that he can know his limits better, and what to improve and how much. Motivation is a key element with every aspect of training and competing. Motivation also has correlation with injuries. Risk of injury can be too big with wrong motivational attitude (Lydell, Hildingh, Mansson, Marklund & Grahn 2011).

#### 4. TREATMENT OF SPORT INJURIES

Kujala et al. states that in Finland, a total of 54,186 acute sport injuries occurred during a five-year period from 1987 to 1991. These numbers were from various sports. (Kujala et.al. 1995, 311, 1465). Overuse injuries, as known as cumulative trauma disorder does not disable an athlete instantly. Thus, this is not considered as acute type of injury (Steffen et al. 2010). Medical attention is not so important in overuse injuries. Treatment varies from acute injuries and depends on what type of overuse it is and how long it has been affected. Overuse injuries can be related to other acute injuries (Pinzon & Larrabee 2006). Rehabilitation process can be divided into four different parts. These are where an athlete is able to walk normally, run normally, start training and finally ready to go back to competition. Usually rehabilitation begins with pool training as soon as an athlete is able to go to water. That depends also from surgery, type and severity of injury. A coach as well as an athlete has to take into consideration biological, neuro-mechanical, metabolic and psycho-sociological aspects, before safe return to sport (Roi 2010, 2 -3).

Athletes are ideally allowed to return back to sports when they are both physically and mentally ready. If they are not, there is a risk for re- injury or possible career ending situation. An athlete can feel confident when making decision to return back to sport (Wiese & Weise 1987). Comeback is not an easy period of time. Positive state of mind is important, in order to avoid and prevent injuries and to prepare an athlete to return back to sports (Williams, Hogan, Andersen. 1993, 468 -472). Goal setting can help an athlete overcome fears and negative feelings. For example, imaginary can help an athlete to decrease pain, promote health and improve self motivation and adherence. Good psychological skills can decrease recovery time (Larmer, McNair, Smythe & Williams 2011). It is important for an athlete to set and reach short and long term milestones. Mental imagery can help an athlete to have positive attitude during long and difficult rehabilitation process. This can help him to return to sport. Mental imagery requires practice and it can be useful skill. Also relaxation can be helpful to some athletes and it is part of mental imagery (Hamson-Utley 2008, 35 -38).

Bauman (2005) has shown that psychological factors can increase potential injury. There are also markers that psychological factors can affect on rehabilitation time. With positive attitude, an elite athlete can return to sport faster than with negative set of mind. Awareness of increasing pressure of injury affects on athletes' capability to return to sports after injury. Increasing expectations of performing well may increase stress levels of an athlete. This can affect on athlete's readiness to return to sport and increase risk of re-injury (Bauman 2005, 432 -435).

According to Podlog and Eklund (2004), an athlete might have different kind of fears related to returning to sport. Fears can be related to re-injury, performing to same level prior an injury, difficulties meeting demands on coach and other athletes. Moreover, there can be fears of losing membership of an athletic fraternity and how their body withstands demands of sport. There are also questions how to cope with three psychological aspects: competency, autonomy and readiness. (Podlog & Eklund 2004, 257 -259). Study of Santhosh et al. (2008) shows that athlete's psychological responses can be often negative, including depression, low self-esteem and distress. Athletes' own personality is in great matter of how to react towards negative feelings and how to deal with those. Sometimes injuries of an athlete can be predicted before it even happens. There can be evidence in training that can lead to injury. These can be either related to training too hard, to wrong technique or to some other reason. Stressful life-events in athlete's life can affect to possible injury. Social support can help an athlete to gain positive results and increase well being (Santhosh, Rajitha Menon & Jayan 2008, 151 -155).

When comparing athletes before and after an injury, there are symptoms like (greater) mood disturbances, lower self-esteem and increased depression. Gladly, negative emotional changes diminish during rehabilitation, if done properly. Confusion, anger, anxiety and depression and fatigue are diminishing fastest during rehabilitation (Johnston, Carroll, 2010, 436-439). Psychological variables, as predictor of injury may occur, thus affecting on athletes psychological response to injury (Mohd Nor 2001, 39 -50; Wiese & Weise 1987, 318 -330).

There are numerous ways to study sport injuries. Reason for an injury can be related to poor equipment, overtraining, poor weather conditions, nature of sport or other possible reasons. Andersen and Williams states a model of stress and athletic injuries for both prediction and prevention. This model is based on the stress response and cognitive appraisal and physiological as well as attentional aspects. Second part of this model is history of stressors including life events, daily hassles and previous injuries. Third bigger part is personality and last is coping resources. Intervention is important in case of avoiding sport injuries (Andersen & Williams 2007, 325 -330).

According to Fisher and Hoisington self-motivation and importance of psychological variables during rehabilitation are essential parameters. Psychological skills can be optimal during rehabilitation process. Athletes' expectations towards a trainer, supervision and motivational support have to be set realistic. Influence of athletic trainer is well known and studied on a level of physical rehabilitation, but in level of psychological rehabilitation interaction between athlete and a trained could be better. An athlete needs more empathy and psychological support during rehabilitation (Fisher & Hoisington 1993, 48 -53).

Study of Fisher and Hoisington shows that 75% of reported athletes demanded increased influence of an athletic trainer. Educational phase is important for athletes. There is a need for information concerning nature of an injury, issues related to recovery process and specific plans during rehabilitation. Rehabilitation is taken most often cautiously, thus athletic trainer together with an athlete can do more together than alone. Keeping up self-motivation is mostly based on adherence and willpower, thus can be improved by controlling intrinsic motivation. Sometimes an athlete can undermine their self motivation by regular monitoring by athletic trainer. Supervision of an athletic trainer promotes greater effort and presence of trainer enhances quality of a rehabilitation workout. Positive aspects, encouragement and directing attention to positive aspects can help trainer to manage rehabilitation process of an athlete for better results. Understanding situation of other teammates can be challenging. Some teammates do not realize their important and supportive role for an injured athlete. Importance of teammates and an athletic trainer is bigger



than people usually realize. Monitoring progress of rehabilitation is important and progress report can be given at regular bases (Fisher & Hoisington 1993, 48 -53).

Overtraining can be a problem in some injury cases. Overtraining is a term explaining imbalance between an exercise and recovery. 7-10 days of overtraining can lead to various symptoms, for example affecting to immunological, nervous or endocrinological systems (Jaekendrup & Hesselink 1994, 239 -240).

#### 4.1 Rehabilitation

Rehabilitation is necessary after an injury and it has to place as soon as possible. If rehabilitation is delayed, it can cause only negative effects. This can cause permanent physical or mental matters or even a state of not recovering at all from an injury. Finding inner motivation is important during rehabilitation process. If there is no motivation, rehabilitation process can be difficult. Goals can be clear in mind at the beginning of rehabilitation. Milestones are keys to keep up motivation. Well planned is half done, is an expression that is true in these situations. Diversity of rehabilitation techniques can keep up motivation and plans being alive. Other thing that helps is positive attitude (Saltapidas & Ponsford. 2007). Important issue in rehabilitation are motivation to recover, willingness to complete recovery period, use proper techniques, be emotionally mature, have high self- confidence and mental toughness to make thru hard times. Communication between an athlete and a trainer can be active and open. Understanding each other is important to manage, thus succeeding rehabilitation (Wiese, Weiss & Yukelson 1991).

#### 4.2 Physical rehabilitation

It is crucial to remember to take it slow when an athlete first gets back into sport and gradually build back up to pre-injury level. Physiotherapist with specialized doctor in sport medicine can decide what kind of physical rehabilitation is needed. Most often this consists of cross training, including stationary cycles, swimming, water therapy and rowing machines. Resting is mandatory and a key factor to recover from an injury. Medication is often pain medication, but also other medication can be

used depending on a injury type. There are many people from different specialist groups. It varies against injury types, what kind of treatment is best for an athlete. Rehabilitation as a process is important to acknowledge, thus can create reflections later on, when an athlete has returned to his sport. Physical recovery outcome can include also emotional and behavioral aspects. There cannot be physical rehabilitation without psychological treatment as well. With physical treatment it is good to have at least stress management, goal setting and relaxation with imagery to get broad rehabilitation (Udry & Andersen 2008, 402 -422).

Goal for an injured athlete is to safely return back to sports. It is not easy to return back to pre-injury level, thus reaching to pre-injury goals can be frustrating process. Staying on right path can be challenging to reach reliable goals (Podlog & Eklund 2009, 535 -544). Without proper physical therapy, continuation of an athlete career might be difficult. Physiotherapy can improve athletes' motivation, behavioural and emotional responses as well as physical responses. Physical skills will help an athlete to cope all emotions and feelings (Hamson- Utley et.al. 2008, 258 -264).

Treatment is often physical rehabilitation, but sometimes psychological treatment has been forgotten mostly or significantly. It is important to treat mind of an athlete by combining it into physical rehabilitation. If the mind and psychological part is not treated properly, it can lead to finishing career because of physiological reasons. A sport injury is almost as important from psychological point of view as it is from physiological side. Treatments are decided by an injury type and it can be further divided as acute or chronic. Some examples of treatment methods are RICER and TOATAPS methods, meaning (R – Rest; I – Ice; C – Compression; E – Elevation and R – Referral) and (T – Talk; O – Observe; T – Touch; A - Active movement; P - Passive movement and S - Skills test). Among medical personnel, most often doctor is the person who decides what treatment method is used. Often X-rays and magnetic resonance imaging (MRI) are needed to determine the extent of any injury. MRI allows doctors to see soft tissues more clearly than X-rays or CT scans do. Pain relief and anti-inflammatory medicines such as ibuprofen are used after every injury. Splints, casts, and surgery also may be needed, depending on the injury (Mero et al. 1997, 251 -253; Quinn 2010; Tse & Chan 1987).

Physical as well as psychological symptoms can occur and these are almost impossible to differ. What can be done to help an athlete to survive with an injury? Social support, physical stressors like fear of re-injury and other physical limitations can be taken into consideration (Masiero, Armani & Rosati 2011). Social stressors can isolate an athlete from his friends. Teammates can create a pressure to come back to sport too soon. Also a coach can give negative feedback to an athlete. An athlete can receive individual training from a coach. This will give an athlete time to prepare for comeback. An athlete can be involved as much as he is willing to do (Podlog & Eklund 2007, 207 -225).

#### 4.3 Psychological rehabilitation

Psychological rehabilitation is meaning for setting realistic performance goals, rebuilding confidence for competitions, overcoming possible fears of re-injury, preventing isolated from the team and providing reassurance for successful returning to sports. Athletes cannot overcome psychological barriers alone, thus professional assistance is needed (Podlog & Dionigi 2010). Athletic trainers' opinion is that in a rehabilitation program, many psychological skills and strategies are important. Trainers' position is to encourage an athlete to have positive and realistic thinking about injury and motivate rehabilitate injury. Reasons for rehabilitation can be clear to an athlete. Also feelings about returning to sport can be understood. Sport psychologist and other members of team leaders are in a key position to assist an athlete towards better psychological skills to handle rehabilitation (Wiese, Weiss & Yukelson 1991).

During the psychological rehabilitation, adjustment can be helped or hindered by the injured athlete's own personality. Pessimistic or optimistic attitude of an athlete during a rehabilitation process can have big effects on desired results. Instead of feeling bad and denying everything, it is important to do goal-setting and self-talk. These are two of the most important in the psychological rehabilitation process. Depending on an injury, tailored rehabilitation program and other methods can cause an athlete to achieve faster healing times and process (Crust 2007).

One of the main goals of psychological rehabilitation is to have a sport psychologist to help prevention of re-injury. There is a need for the sport psychologist who takes personal responsibility for athlete's recovery process. An athlete needs high motivation, desire and determination. This can be also healthcare personnel who are working with an athlete. Social support is important during rehabilitation process and it can be more detailed during rehabilitation, than before the injury. Maintaining a positive attitude is important after injury and without support person, it can be different to achieve. Mental training for dealing with an injury, as well as visualizing what has happened and what can happen next, are important factors in a case of recovering mentally from an injury. Pain control is an issue that can be solved at some point with imagery and mental training. Imagination of feeling with no pain can be used with some people. Spiritual training can be useful to some athletes. Relaxing and stiffing muscles is one method to psychologically deal with pain and mental issues concerning injuries (Porter & Foster 1986, 81 -90).

According to Clement & Shannon (2011) social support helps harmful effects on psychological feelings and issues caused by sport injury. As a definition, social support means "an exchange of resources between two individuals, perceived by the provider to enhance the wellbeing of the recipient". In world of sport, sport injuries are often unavoidable and cause negative reactions to athletes. These negative feelings can cause more harm to an athlete and can make rehabilitation more difficult. Social support has strong relationship between stress and mental wellbeing. Social support can be given with several ways. These are listening, emotional support, reality-confirmation and task-appreciation support. Easiest of these to offer is listening. Social support can be given by coach, doctor, physiotherapist, teammates or other friends (Clement, & Shannon 2011).

According to study of Laats (2011), through the rehabilitation process athlete expressed strong athletic identity and for each participant going after an injury was considered a normal part of the sport (Laats 2011). Social support is alongside stress and coping, one of the most important construct in health psychology. An athlete respond to an injury varies psychologically. Role of social support is crucial

during recovery process. Personal experiences affects on how an athlete accept social support. Most often injury is seen as stressful situation and psychologically it affects on athletes' abilities to handle it. Any social support is beneficial (Maddison & Prapavessis 2005). Though, it is necessary to differentiate between different kind of support that is available. All support won't suit to all athletes. Social support can be seen as a multidimensional perspective, meaning structural and functional. Social support helps an athlete to cope with different kind of injury-related stressors (Mitchell 2011). According to research of Hardy et al, social support is in a major role of handling issues like crisis, stress and other mental and physical situations. Social support is useful in different situations during a life (Hardy, Richman & Rosenfeld 1991).

In case an athlete has positive expectation towards returning to sport, risk of re-injury is less than if an athlete has anxiety, stress and negative expectations. An injury duration has also little bit affect on result, but more significant was mood disturbances (Albinson & Petrie 2003). Athletes with several life stressors are in greater risk of having an injury or re-injury after recovering. This can be taken care by removing sources of stressors or by learning to deal and accept the sources. Life satisfaction is important especially in a social environment. Stress diminishes life satisfaction, especially with major injury but less with minor injuries (Malinauskas 2010).

Psychological rehabilitation can be difficult to cope after an injury. It takes time to recover when there are no physical signs. It is sometimes difficult to rest and take time off from a sport. This is especially true, when an athlete is experiencing a good season with results. Emotionally it can be hard. These emotions can lead to finishing career, if these emotions are not dealt properly. There can be denying, accusing and several other emotions related to injury and process of rehabilitation afterwards. It is important that an athlete has a lot of support during this difficult time period. An athlete may need a professional help to feelings that he is going thru. Athletes will act differently for health care professionals, thus is it important to know how to treat people.

Psychological issues during rehabilitation process of treating injuries are important for everyone. That is why this period of time can be said as crisis. Besides stress, psychological factors related to injuries are potential of creating stressful athletic situation. For example poor performance can lead to injury, depending on how threatening situation is. State anxiety is also one of the key elements related to injury. An athlete who has better psychological skills is more likely to avoid or rehabilitate faster from injuries. Good skills are goal setting, imagery and relaxation. Personal factor are in great part. These are for example self-concept, introversion-extroversion and tough-mindedness (Weinberg & Gould 2007, 448 -452).

Psychological factors that are good with every sport are self esteem, long-spanning, relentless, brave, tolerance of disappointment. Also it is important to be creative, being able to relax, being able to calm down and being able to concentrate. These skills are important and necessary to win competitions without injuries (Mero et al. 2007, 227 -239). A performance anxiety can happen often after an injury and during an athlete is coming back to his sport for the first time. There are many factors that can cause anxiety like home, family, friends, own experiences and expectations and afraid of injury. Moreover, other people and groups can cause anxiety and media, fans, publicity, financial supporters, sponsors and own financial issues. Rest of these factors can be organizations like Olympic committee, rules, coach, team, other personnel or important game (Eriksson et al. 1987, 283). Positive thinking during rehabilitation process is a key element to recover. Most often coach is the first person who is dealing issues about an athlete. Psychologically role of a coach is to deal with psychological concerns with an athlete. Sometimes a coach is not well educated for psychological issues, thus it can be advisable to have psychological support from professionals (Podlog & Dionigi 2010).

Severity of an injury is closely related to amount of psychological distress. Psychological responses can be either cognitive or emotional. Injuries can be handled as a loss of health and by learning previous experiences from other athletes. These reactions are denial, anger, bargaining, depression and acceptance. Athletes' recovery process includes three different stages. These are distress, denial and determined coping. Examples of these can be anger, shock, isolation, guilt, or

helplessness. Alternatively responses can be cognitive, emotional or behavioural. There is different kind of models concerning behaviours during an injury response, but most used model is injury response. That is made by Wiese- Bjornstal, Smith, Shaffer and Morrey's during 1998. That model includes pre injury factors, actual time of sport injury, recovery outcomes, behavioural and emotional response. This model also includes personal and situational factors. Thus, it is important to notice that relatively little attention has been given to surroundings with injury rehabilitation process and theory between that (Udry & Andersen 2008, 410 -419).

One way to reduce risk of injury is to acknowledge psychological factors associated with injuries. According to study of Podlog, Lochbaum & Stevens (2010) psychological wellbeing includes positive and negative self-esteem as well as vitality. Basic needs of psychological wellbeing are competence, autonomy and relatedness. (Podlog, Lochbaum & Stevens 2010, 167 -182). These issues can affect to athletes` return to sports after an injury.

#### 4.4 Prevention of sport injuries

Some major issues to improve healthy life style are good inheritance, family relationships, proper and realistic self- image, body image and suitable diet. Positive attitude is the most important key element to control feelings and increase positive feelings. Healthy diet is major element for an athlete to prevent sport injuries. Old traditions can hamper these efforts, like food cannot be wasted or everything on the plate has to be eaten. Poor eating habits can lead to illnesses and further lead to injuries (Mero, Nummela, Keskinen & Häkkinen. 2007, 145 -210).

In injury prevention, it is important to think safety issues and try to protect and avoid possible injuries. Unintended consequences of the countermeasures are most effective, when combined with trade-offs that go hand-in-hand with implementation of a safety program and a culture (William, Sands, McNeal, Jemni & Penitent 2011). According to Finch, Ullah & McIntosh, in a future there will be at least consideration about global injury mechanism. Each possible injury mechanism will be exposed to closer consideration. These accidents are for example falling, head

impact or frictions. Individual (intrinsic) risk factors are considered by selecting controls (matching) or analyzing (age, sex, skill level, anatomical or physical factors and fitness) (Finch, Ullah, & McIntosh 2011).



## 5. PURPOSE OF THE STUDY

The aim was to study experiences of elite swimmers during recovery process. Secondly, this study helped to describe and understand possible career ending factors after an injury among young elite swimmers. Thus, the current study aimed to describe in detail:

1. Participants' perceptions on injuries and rehabilitation process
2. Deficit factors of motivation during rehabilitation process

## 6. METHODS

Semi structured thematic interview was used as conducting this study. After familiarizing to subject and background of this topic, local swimming club was contacted to recruit participants. Five swimmers took part of this study, three males and two females. They had suffered from one or several injuries and gone through a rehabilitation process. Two swimmers were still competing and three were active in other sports than swimming.

Athletes were contacted and given consent form to fill in. All participants were informed about the purpose and the method of the study. They were informed that participation in the study was voluntary. They could refuse to participate or withdraw from the study at any time without any repercussions. The participants were reassured that their responses would be treated confidentially. Their identities would not be revealed in the reporting of the findings. One athlete was younger than 18, so his parents were also contacted and permission asked. Other athletes were 18-22 year old. Based on gender, there were three males and two females.

There were five different themes in the interviews all related with injuries or rehabilitation process, common to swimming. Interviews were held during one week at the cafeteria of swimming pool or at library of Jyväskylä University. Each interview took about 40 minutes. Afterwards interviews were transcribed verbatim. The material was collected by the researcher. The data analysis was performed in a different step:

- The verbatim transcription of each interview was read several times to provide broader view of the interviews.
- Main points from interviews was formed into bigger sections
- Themes and sub-themes were created (table 1).

Table 1. Overview of the sub-themes, themes and core theme:

| Subthemes   | Themes   | Core theme          |
|---|--|---------------------|
| Amount of training<br>Success<br>Athlete-coach-team relationship  | Career before injury<br><br>Goals and milestones   | Achievements        |
| First reactions after an injury<br>Immediate response from teammates and a coach  | Immediate:<br>psychological changes<br><br>Delayed:<br>Reasons for injury                    | Reactions to injury |
| Treating only physical injuries<br>Lack of psychological support<br>Hope to reach previous goals<br>A tailored rehabilitation: a physical solitary<br>Keeping up motivation, psychological solitary | Resources of rehabilitation<br>Lack of presence of Sport Psychologist                        | Rehabilitation      |
| Lack of hope to reach personal settled goals and milestones<br>Role of a coach as a gatekeeper to a team<br>A coach: letting quit too easily  | Quitting or continuing a athlete career<br>Austerity policy<br><br>Lack of presence of Coach | Motivation          |

## 7. RESULTS

Five elite swimmers were questioned by theme interview method. Three swimmers started swimming at the age of five years. Others started at the age of two and seven years old. Some took swimming classes and some just swam with friends and families. All athletes had hobbies, before and after their swimming career. Most popular hobby was gymnastics. Other activities were basketball, gym, jogging, figure skating and floor hockey. Other non exercise activities were playing guitar and handcrafts. Before injuries, all athletes had goals to get better times and most swimmers had wanted to get medals and even records. Also some had goals to get into relay crew. All participants were elite swimmers. Most swimmers had several medals from Finnish Championships. There were several gold, silver and bronze medals as well as placements for national team. Some athletes had medals from relay. Two athletes were still competing and reaching for medal positions. Three swimmers were not competing, but doing something else in relationship with sports.

All swimmers had at least mild shoulder injury, three participants had this as a major injury as an accident and two had overuse injury in their shoulders. Two swimmers had back injuries due to accidents. One swimmer had also knee injury. Three swimmers needed at least one surgical operation during rehabilitation. Other two swimmers needed nonsurgical rehabilitation. Reasons for injuries varied. Injuries in this study were caused in most cases by overuse of limb and wrong technique. In interviewing participants, shoulder injury was either congenital or from accident or overuse. Other injury types were knee or back. Three athletes had more than one injury. In three cases injuries occurred same time and in one case two injuries occurs separately. Surgical operation was needed for 3 swimmers.

Most of the injured athletes felt themselves as strangers in his or her team. They experienced like they were outsiders. For example injured athletes were given different, easier training programs. This lead into situation, where other members of the team saw them as skippers, because they did less than the others. Direct quotations are marked with "Participant 1- 5". (P1) "All other teammates were jealous to me, because I was doing different training. They thought that I want to skip training

because I didn't want to train. I wanted to practice as they do but I just couldn't". They looked at me like a Study of Pensgaard & Roberts (2002) mentions, that in competitive world, an athlete who is not able to meet expectations and focus on good results might lose identity or experience being left alone and stressed. This may lead to short or long term affects. (Pensgaard & Roberts 2002, 54 -59).

Body of a pubertal athlete is growing fast; consequently it creates challenges to coaches. Results from this thematic interview are leading into conclusion, that bodies of young elite swimmers are especially prone to shoulder problems. Exercise programs may give too much load for the young person's growing body. P2 "My shoulders were not ready to as much training as we had. We had too much training just before my injury. Training made my injury worse". On the psychological side, the injured athlete can act offensively and impulsively against a coach. Generally, pubertal athletes are experiencing strong feelings and thus, a young athlete may feel that only way to solve a problem is to make a scene: this imprudent acting may lead to unnecessary quitting for an athlete career. The theme interview reveals feelings of young swimmers, that coaches are taking swimming too seriously. This had negative effect for the motivation of the pubertal athlete.

Rehabilitation process had varied, based on injury type. Physiotherapist took part in every participant and four of five swimmers had contact with other professionals like physician. Follow up of physiotherapist was combined with recess from swimming. During this recess the athletes had easier training sessions outside swimming pool with weights or aerobic. Some swimmers had easier swimming training. Time of the break depended on level and type of injury. Two of the participants had a contact with physiotherapist several times per week; other two had once a week and a one less than that. P3" It was good to have medical personnel, especially physiotherapist who is always available. I want to get answers if I have questions concerning my injury. It would be good to have more contacts with doctor and motivational coach". Frequent contacts with physiotherapists are also presented in study of Ninedek & Kolt. Physiotherapists are working closely with the athletes during rehabilitation process, so their role is important. Physiotherapist is able to

give some psychological help to an athlete, if sport psychologist is not available (Ninedek & Kolt 2000, 191-206).

Every interview showed that social support was important during and after injury. Support group is important for an injured athlete. All athletes in this study had physiotherapist all the time during their rehabilitation. Majority of athletes had doctor's appointments during their rehabilitation process. Physiotherapist took part actively in three cases. Team members and friends as well as other support groups are in key element after injury. Results of this study presents, that without mental support, recovery of the injured athlete might not be as effectively as with those cases, when the athlete has strong support group. According to study of Laats (2011) Support and connectedness to the other players, participants in her study talked about family relations during the time of their injury. Members of the team were present to support injured athlete during a rehabilitation process. Athletes recalled negative emotions, when they were not able to train with the team. Participants perceived important and described in detail the feeling of connectedness they had with the team and family during the time of their injury. Results in study of Laats shows that, additionally, relationship with their physiotherapist during the injury rehabilitation was described by the participants as close, trustworthy, secure and supportive. (Laats 2011)

Rehabilitation process was long and the athletes were not able to manage without social contacts. These contacts were teammates, athletes with other or current injury and other friends. This is also proven by other researches. "Social support helps injured athletes diminish their uncertainty by providing them with a sense of control over their situation" (Albrecht & Adelman, 1987, as cited in Robbins & Rosenfeld 2001, 280). Another citation from same source proves that it is important to fulfill roles of social support during whole rehabilitation process. It does not matter who and how experienced a support person is in case of injury. It is important to have someone to talk to. "Who takes on that role and who would be more successful in that role. This is important but unanswered question" (Robbins & Rosenfeld 2001, 280). P3" I felt that without my friends and teammates I couldn't be at this positions now. I had lot of support during my rehabilitation process and that helped me thru

hard times”. P4 “ I needed support but I felt so lonely during my rehabilitation and that might be one of those reasons why I had to end my career after injury”.

Reaction of the coach to the injured athlete and rehabilitation process was in the key element when thinking about continuing career after injury. Some swimmers didn't have enough help from the coach while losing motivation. Some athletes cut out from swimming team too early, because when they said to the coach they wanted to quit swimming, coach simply agreed. This happened without thinking the issue deeper at all. Some coaches had limited access to knowing what is going on with the participant. Reason for this can be that the athlete may have two coaches the same time or he has just changed the training group.

Volatile athlete-coach relationship is important. P5” My relationship with my coach was bad. We didn't get along and I felt that my coach didn't like me at some level and that effected on his coaching style. He didn't want to coach me”. P2 “I had wonderful coach who called me once a week during my rehabilitation process and made sure that I was feeling good and if I needed help. She made sure that I had everything I needed”. An injury affects seriously to coach-athlete relationship, even if their alliance have been good before injury. Feeling as an outsider can be increased by arguments with the coach. These arguments diminish athlete's motivation and fellowship with the team. An Injury caused feelings of frustration to the athletes. The athlete could blame coach for his injury, or he didn't want to tell about the pain to coach, due to fear of negative reactions. The athletes felt that coach was focusing only to healthy athletes. The athlete might felt this as discrimination, thus this was weakening his motivation towards swimming. A risk for vortex of negative emotions was imminent. This study presents, that negativity will lead to a loss of motivation and to early quittings.

Use of sport psychologist is needed during rehabilitation process. The athletes could combine sport psychologist with their trainer few times per week. It can be useful to have sport psychologist or a motivation trainer, as swimmers call it. He can work together with trainer and they both could focus for their fields of expertise. If an athlete has problems with a low motivation, he could talk to sport psychologist

instead of trainer or coach. By addressing this problem with specialized expert, an injured athlete could get support for keeping up motivation. Otherwise, he might be forced to keep up his motivation alone. This can increase envy and other negative feelings among other athletes in a team. Other team members cannot understand why injured athlete does not have to work out as intensively as they are doing. By these reasons, an athlete can be given an opportunity to see sport psychologist. This approach is preventing acute conflicts in coach-athlete relationship, which could otherwise lead to early quitting of careers with pubertal athletes. Psychological wellbeing is essential in case old injured young athlete. P5 “If there would be either sport psychologist or some kind of motivational coach, I think I would be still competing”. P3 “Motivational coach would be a great help once a week during our practices and more if needed”.

In four out of five interviews was clear that athletes had wish for sport psychologist as part of their team. Sport psychologist or mental coach is welcome to team. At the moment it seems that coaches are not updated what happens in their teams. This is at least among injured athletes. There is too much training for young swimmers who are growing up. There seems to be lot of changes in different teams and groups. This alters concentration of swimmers to their goals and trainings. Too long break can lead to losing motivation on rehabilitation. Sport psychologist has knowledge base, on reflecting psychological principles in working with athlete (Wiese, Weiss & Yukelson 1991).

Results from all five interviews show how important motivation is and there are feelings towards better communication between team members and coach.

P1 “Motivation is everything. After my injury I felt that I lost everything and it took long time to get that motivation back. I felt that I could have been physically ready to return earlier but I didn’t have that mental desire to come back and compete”. An injury is a mental as well as a physical trauma and this accident can be treated respectfully. Even though sport injuries are common, psychological side of injuries is not well reported. With positive attitude, goal setting, proper coping skills, intrinsic motivation and psychological assistance, recovering from sport injuries can be easier. It is necessary, that all goals can be set realistic. Being involved with the



team during rehabilitation is important. An athlete can be willing to do his best and learn to recover during a rehabilitation process. Understanding setbacks and stress during rehabilitation is necessary. Recovering from an injury is not an easy process. Relaxation, listening and controlling emotions is valuable knowledge. Imagery can be used in some cases. Sport psychologist is with proper psychological skills to deal with injured athletes and process of recovering. Coach and physiotherapist can do something, but they often don't have enough training and skills (Wiese et al. 1991; 15 -24). Treating injuries cannot be overlooked, as it is in case of smaller injuries (Ristolainen 2012).

Injuries are often called as a crisis and can cause stress, panic, fear, and other emotional mental crisis. Body and mind is combined and sport psychologist is the best person to treat those. Psychological concerns can cause frustration, tension, anxiety or panic and rehabilitation prolong without proper treatment. When feelings are stable and athlete is able to accept his situation, recovery might be easier. An athlete can be able to turn recovery to new opportunity in his career (Lynch 1988, 161 -167).

The injured athlete might feel inferiority and weakened motivation. This could occur, even if he or she had will of power to train with other group. Interviews suggest that all coaches were not interested, or either they had no resources to take care about injured athletes. Some athletes felt themselves lonely and as outsiders after the injury. This was immediate result for a lack of support. Some athletes felt good, when they had a friend who had injuries at the same time. This peer support from another swimmer was positive effect and made recovery faster and easier in two cases. Most commonly, injured athletes felt they were isolated from their team. Some injured athletes suggested, that other teammates may be so competitive, that they did not want to help these injured athletes.

## 8. DISCUSSION

Injuries and overtraining have connection between motivation and quitting of career. Thus, it is important to acknowledge physical aspects in this study. Interviewed athletes felt that they had to train too much. Also they thought that they were too early age when their coach added more training. Two of the participants' had growth impairments, because of the excessive amount of training during a growing age. According to this study shoulders were especially prone to malformation with young elite swimmers. Reaction to an injury varies a lot, based on athlete's personality. An athlete can experience different psychological consequences from sport injuries. (Podlok & Eklund. 2004) States, that practitioner can help an athlete becoming stronger to deal with problems and adversity. Study of Raglin et al presents in their study of 13-18 year old swimmers that swimmers easily overstrain. Overtraining is result of too much physical and mental training without enough recovery. Mood disturbances and even burn out can be result of overtraining. Also injury can be caused by overtraining (Raglin et al. 2000, 61 -70). According to study of Goss (1994) it is difficult to determine proper amount of training. One way is to see training limit, when an athlete has symptoms of overtraining. Overtraining is said to be imbalance between recovery and training (Goss 1994)

Physiotherapists are often first and only source of help after an injury (Barefield & McCallister and Brewer, 1997, 333 -338). . This is also one of the results from this study. Athletes can have psychological rehabilitation combined to psychological rehabilitation (Barefield & McCallister, 1997, 333 -338; Brewer 2010, 233, 241). According to Cupal (1998) psychological rehabilitation gives better results and affects on mood enhancement, stress, anxiety and decreasing pain (Cupal 1998, 103 -123). According to study of Lee (2011), Finnish athletes reported the highest expectations for directiveness and genuineness from the physiotherapist, and high expectations for physiotherapy outcomes. Compared with high expectations for such items can be seen to indicate athletes' expectations for accurate informational support and expertise from the physiotherapist (Lee 2011).

Psychological responses to injuries can be taken into closer consideration. Physiotherapists need more psychological assistance with injured athletes. Researchers have seen the value of physiotherapists, being able to deliver sport psychology services, when a sport psychology consultant is unavailable (Clement & Shannon 2009, 504 -522). If this is not possible in every case, physiotherapists can have more holistic approach with taste of psychological components during rehabilitation process (Scherzer 2004, as cited in Clement & Shannon 2009, 505). In a future there can be more sport psychologist working in a team –making sure that an athlete is psychologically and physically well.

Based on results from this study, an injured athlete expects psychological support and motivational support from a coach. Coaches must be advised to be very careful with their statements, when a young athlete is bringing quitting his or her career into a discussion. This decision cannot happen unguarded and without a severe discussion of a young athlete and his or her support group. Study of Podlog & Eklund states that coach has to deal with athlete returning to sport after injury. An athlete might have physical stressors, including for example fear of re-injury and fitness concerns. Social stressors can be for example social isolation from other team members and pressure of returning to sports as full team member. Performance stressors can be falling behind others and not regaining to pre-injury level. How to solve this issue? The study gives ideas to have individual training sessions, keeping involved in sports and providing social support (Podlog & Eklund 2007)

Athlete might face pressure when coming back after injury. He might have issues dealing with fear, low self-esteem, and loss of identity or feeling as outsider in his team. Psychological wellbeing is equally important as physiological wellbeing. Returning to sports after an injury is important transition for an athlete. An athlete is either ready or not. Support is necessary from teammates, coach, and other parties, dealing with athlete (Podlog, Lochbaum & Stevens 2010, 167 -182).

In the future, goals of injured athlete can be different or same before the injury. Among those athletes who are still swimming, goals have changed quite a lot after the injury and rehabilitation. Two swimmers are still competing and their goals are to reach to medal positions and into athlete success. Though, reaching to pre injury

level is very important goal. Some athletes who have finished their swimming career have goals to stay fit and continue new career.

Training groups can be same all the way through career. If groups are separated as they do now, swimmers have to change a coach. For the coach, there are new athletes to practise with. Motivation keeps up if athletes are familiar with each other and they can support each others. Thus, change of training groups and coaches can create negative stress factors to an athlete. More can be done to maintain high motivation with levels of their skills and abilities. When a swimmer has high skills and abilities, he or she might be able to avoid injuries better than when not proper skills. It is important to avoid training too hard when swimmers are growing up. Injury can cause results to stay at same level. This can lead to losing motivation and ending career. This can be ended by any possible ways. An athlete can feel as an outsider, because other team members are training full pace and an injured athlete is not. An injured athlete needs help from his or her team members.

Athletes felt that they were working alone, without enough support. Support is very important during recovery period. If an athlete is alone, recovery might be more challenging and takes longer period of time, than when an athlete is able to share his feelings to someone. Support group can be from team members. An athlete can come back to sport after an injury when he or she is ready to do that. Only an athlete knows when he is ready to face training sessions and competitions. This is also stated in article of Bauman (2005) “it is paramount to assist the athlete in returning to competition in the healthiest playing condition and in the fastest time possible” (Bauman 2005, 432).

According to study of Podlog & Eklund Positive attitude helps to gain intrinsic motivation and returning to sport. Other people are in great position to help an injured athlete. Expectations from an athlete himself and other might be either same or different. If these are different, an athlete might feel extra pressure. Decreased confidence can be turned into positive attitude, with a help from social support group. Internal motivation is better and stronger than external motivation (Podlog &

Eklund 2005, 20 -34). Social support is needed to maintain motivation to continue sports after recovering from injury.

Based on results from theme interviews of this study, motivation is the key element. Lack of hope can lead to anxiety to reach personal settled goals and milestones. One major finding for the theme interview was similar for all interviewees: if results of young swimmer are stuck on to a certain level, there is a systematic loss of motivation. This loss of motivation and anxiety for not-improving their results are major factor for quitting an athlete career. When comparing findings of this study to an example of 400 meters runner Kirsi Mykkänen, winner of four times 400 meters national championship, one may ask, how much potential we are wasting on other field of sports? Mykkänen did a couple of years break between transitions from young athletes to adults, due to overtraining and loss of motivation. Mykkänen's career is a testimony, that young elite athlete' career is not always finished, even after a few years of break. Like Mykkänen, young elite athletes can come back with higher motivation and better physical and mental condition after a break. This shows that career is not always finished if an athlete has a break of few years. Mykkänen made a comeback with higher motivation and better physical and mental condition. She won several national championships after her return to sports. Lack of motivational skills in a team may lead to early quitting. There is a clear indication for the theme interview, that traditional coach had let some athletes to quit their careers too easily.

According to this study, injury of one athlete may lead to several quittings by other swimmers. If an injured athlete is an opinion leader and good friend of others, his career termination can affect on others –who might do the same. This can be seen in interviews, when two good friends ended their career within 3 months. According to doctoral thesis of Ristolainen (2012) athletes return to sports too soon after an injury. Also rehabilitation and supportive training is forgotten. In study of Ristolainen (2012) and Ristolainen, Kettunen, Kujala & Heinonen (2011) there are intrinsic and extrinsic factors in injury occurrence. Often acute injuries in swimming happens somewhere else than in actually swimming. Overuse injuries occur in swimming pool. Swimmers had most injuries in shoulder region and secondly acute

injuries in back. This is due there are more than million strokes annually with each arm Ristolainen (2012). Incorrect biomechanics, errors of technique and repetitive movements can cause micro trauma to structures in shoulder region. Women terminate career more often than men. Swimming has great number of movements without ground impact. Out of all 432 injuries, 32% were among swimmers. Freestyle caused most often injuries. Among swimmers there are 32% injuries and 51% overuse injuries. There are more acute injuries among men than women. Among overused injuries women have more injuries than men. There is probability of 42%, that swimmers terminate their career more than in other sports. (Ristolainen, 2012; Ristolainen, Kettunen, Kujala & Heinonen 2011).

Role of a coach is important and especially challenging in Finland, where swimming teams have fairly limited budgeting and human resources. Thus, multidisciplinary role of coach is challenging. Training of swimming is diverse. A coach can be team manager, regular coach, support person as well as sport psychologist or even act as a physiotherapist to an injured athlete. A coach must treat athletes equally. Results shows that coaches cannot always give resources or time needed for an injured athlete. A coach might not have enough time for communication, in order to keep up motivation of athletes. Thus, a coach needs more skills and methods to be able to motivate athletes. A coach can face overwhelming tasks, thus needing more human resources for assisting. A coach is a link between an athlete and family members and support group. A coach has to take care of interest group and family members. A coach acts as a gatekeeper sharing limited number of resources: who can join national team and who can't. Decision making can be difficult and needs information from different perspective. Only little is known about coaching perspectives on returning to sports after an injury and how to help an athlete with returning phase. Role of a coach can be developed and taken into close consideration (Podlog & Eklund 2007)

According this study four of five swimmers felt less motivated after the injury and during the rehabilitation. Rehabilitation period is critical time for an athlete. If there is temporary loss of motivation, an athlete can face the decision to continue or either finish his career. A coach is in a key role deciding what to do with athlete's future.

Challenge is how to keep swimmers motivated and enjoy their field of sport. Lack of previous qualities can lead to career ending situation, where an athlete has lost temporarily his motivation. All this is due to lack of recourses: a coach has an overwhelming work to keep up all his multidisciplinary roles. Result of this is, that a coach and an athlete can do career ending decision too easily, especially in case of injured and temporarily less motivated athlete. It is important to understand, that pressure of other family members and interest group can affect on decision of an injured athlete and a coach. A coach can feel relief due to career ending, because an injured athlete causes extra work to him, especially if he is not experienced to handle that. This extra work can be left to professionals, like sport psychologist. This challenging, multidisciplinary role of a coach can be divided: a coach takes care of athletes' physical needs and skills and a sport psychologist for mental coaching. Sport psychologist can act as a link and a catalyst between a coach and an athlete.

Article of Podlog & Dionigi explains important role of a coach, when an athlete is making crucial decision to continue sports or not. Role of a coach is multidisciplinary: he is same time teacher, educator, social support and a coach. A coach is responsible for selecting team members. These selections can be made based on discussions together with athletes and other team specialists. Though, a coach is not expert in area of psychology and medical issues. A team needs those experts working together with a coach to get better results. All decisions for an athlete can be made together with all specialists (Podlog & Dionigi 2010).

Taking sport too seriously can lead to losing motivation and possible injuries. It is important to keep sport interesting and fun for athlete (Gustafsson, Hassmén & Hassmén 2011; Bergeron, Michael 2010). Both parties can give and get feedback and thus improve team spirit and motivation. According to this study, an athlete might be afraid of a reaction from a coach, for example of in case of being late from practises. Role of a sport psychology to treat sport injuries can be important. Regular coach does not have time or abilities to handle both physical and mental training. In Finland, 2012, a sport psychologist is used too rarely. Use of sport psychologist would achieve better results with injured athletes. Sport psychologist can affect on athletes mental wellbeing. Avoiding and treating injuries and their psychological

symptoms, like temporary loss of motivation, can be helped in meetings of a sport psychologist. Sport psychologist can work together with a coach to make sure that athletes get wide range of coaching. For example sport psychologist can meet athletes once a week and talk about issues that are needed to go thru. A coach might need help especially when handling psychological issues. Stepping from youth to adults' team can be hard step for an athlete; both mentally and physically. Thus, an athlete would like to have a person, who could help during this period. This period could expose an athlete to injuries. Rehabilitation period was difficult time of injury to some participants of this study. Sport psychologist could be the source and bridge between other rehabilitation participants, for example a doctor, a coach and a physiotherapist. Data transmission between all members is important, thus sport psychologist can help with this issue.

Article of LaRose (1988) explains how work of sport psychology requires time and effort. Usually it is offered to elite athletes. Focus is based on consulting and can be broadened from teaching perspective to more into field of training. The article concludes, there is not enough sport psychologists to base on need for that. Often coaches are ex-athletes and their knowledge perspective is based on their personal experiences. The article states, it would be good to teach some pedagogy to all coaches. Sport psychologist are often called as sport consultants, can be called as educators, not clinicians. Sport psychologist can be used more in non-elite level of sport, not only elite level. They can work as a link between an athlete and a coach. How do sport psychologists and consultants work? They make initial contact to an athlete, and they can define the relationship more closely. Best practices of working methods are used, reported and process is finished to action and completion (LaRose 1988, 141 -153). Even today, role of a sport psychologist as a team member is not widely acknowledged. It would be advisable to talk more about positive effects what can be done with sport psychology.

Competitive sports can have either negative or positive effect on athletes' mental health. Role of a sport psychologist can play a major role on deciding either positive or negative attitude of an athlete. Also role of a coach affecting to decision of an athlete is important. Coaches shall go to regular training where they can learn more



from leadership skills, self-motivation, positive expectancy, problem solving skills, decision making skills and communication skills. It is imperative to have preset goals and milestones in between the bigger goal are showing that goal oriented coaches will make better results, than non-goal oriented coaches. Self-motivation is a skill that an athlete is involved in competitive sports. A coach can affect on this to positive or negative way. Self-motivation can be developed by visualization expectations and beliefs. Before this can happen an athlete has to have desire to do this. State of mind is strong and a creative athlete can handle with stress better than others, by using self-motivation. Creative leader can have mentally stronger athletes in his team (Bell 1997).

This study is suggesting that swimming teams should include sport psychologist as a part of coaching team. A team or an athlete shall see sport psychologist regularly. Even if there are no problems, avoiding worrying issues proactively is important for a whole team. For example, overtraining can lead to an injury, thus leading to several causalities like loss of goals, motivation and added workload for a coach. After an injury, an athlete shall be able to see a sport psychologist as well as other medical personnel. By implementing this strategy, teams can prevent career ending situations with a young elite swimmer, struggling with temporarily lowered motivation. Pre-emptive measures can be assessed into the motivational issues found in this study. This study suggests that coaches shall develop lightened and modified exercises, in order to avoid shoulder abrasion and strengthen the motivation of young elite swimmers. Based on the results of this study about coaches taking sports too seriously, they shall develop more gaming-like events for young elite swimmers, in order to strengthen motivation and team spirit among teenagers.

This study has been given to associated participants for validation and check of integrity before the publication. Results of the study considering sports and exercise psychology and motivation can be transformed to other junior level teams in Finland, possibly for other countries too.

## 9. CONCLUSION

Researcher of this study is emphasizing significance of the topic. Thus, this research is considering of perceptions of young elite swimmers, because injury related rehabilitations are generally understood only as a physical treatment. Instead of, human body must be treated as a psychosomatic whole. Thus, it is imperative to understand psychological factors of an athlete during a rehabilitation process, which may have direct effect for a lack of motivation. Moreover, this study will give a new modus operandi for rehabilitation of young elite swimmers, in terms of sport and exercise psychology.

### 9.1 Ethical consideration

Before interviews, the leader of swimming team was contacted. She gave the names of athletes who had athletic injuries. Researcher of this study contacted athletes privately and got five athletes to the interview. All athletes signed consents to participate (Appendix). They had right to withdraw from this study at any time without telling the reason. Thematic interviews were made privately with each athlete. Answers were analyzed and reported with high confidentiality to provide anonymity.

### 9.2 Limitations of the study

There are several limitations in this study. There were only five interviews, as this was the qualitative research. There could have been more swimmers who are still continuing swimming to ensure saturation of the results. Researcher of this study is also a recreational swimmer in Swimming Jyväskylä. This is positive, because researcher knows more inside information about the team and swimmers. However, it can be a limiting factor, because researcher is too much inside the world of swimming and can be prejudiced. Interviews could have been deeper into psychological issues concerning life before and after injury. Now it is concentrated on injury and rehabilitation process. It would have been good to have clear open ended questions. Due to small number of participants, athletes might feel that they can be recognized from their answers, even if anonymous issues are dealt clearly.

Inexpediency of the researcher of the study might have effect on the end results and conclusions.

### 9.3 Practical Implications

Further studies are needed for evaluating necessary workload for young elite swimmers, in order to understand causes for shoulder abrasion and loss of motivation during rehabilitation process. One resolution to the former could be a lightened, personalized or more individual training program for pubertal swimmers, for example gaming-like events for strengthening motivation and team spirit. This means taking seriously both physical and motivational aspects of pubertal athlete. This study is showing, that a coach might let athletes quit too soon, if motivation of a swimmer is temporarily lowered. More research is needed to get better understanding for a challenging, multidisciplinary role of a coach in Finnish swimming teams, which have relatively limited human resources. Advantageously, more studies are needed for a use of a sport psychologist for strengthening motivation during rehabilitation process.

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## APPENDIXES

1. Information sheet for athletes
2. Information consent form, for athletes
3. Information consent for parents
4. Themes for interview

Appendix 1.

Information sheet for athletes

## **Tietoa 'Nuorten uimareiden urheiluvammat' - tutkimuksesta**

Tutkimuksen tarkoituksena on selvittää uimareiden urheiluvammoja, niiden laatua, kestoa ja miten urheilija on kokenut vammautumisen. Tutkimusryhmään haetaan haastateltavia, joilla on parhaillaan tai on ollut jonkinasteinen urheiluvamma, joka on vaatinut kuntoutusta ja jonka takia uimari on joutunut olemaan poissa aktiivisesta urheilusta.

Tutkimuksesta saatuja tuloksia voidaan hyödyntää urheilijoiden psykologisessa valmennuksessa ja vammojen ehkäisyssä. Tavoitteena on luoda seuroille paremmat mahdollisuudet ehkäistä urheiluvammoja ja maksimoida urheilijoiden suorituskykyä terveyttä vaarantamatta.

Tutkimus tehdään haastattelemalla uimareita. Tutkimuksen tulokset ja koko haastattelu ovat luottamuksellisia.

Tutkimuksesta voi kieltäytyä tai vetäytyä milloin vain ilman seuraamuksia ja ilman, että se mitenkään vaikuttaisi harrastusmahdollisuuksiin. Tuloksia käytetään anonymisesti eli ilman, että henkilöllisyys paljastuu, tieteellisiin tarkoituksiin kuten julkaisuihin tieteellisissä ja uintia käsittelevissä aikakauslehdissä. Tähän tutkimukseen osallistumiseen ei tiedetä liittyvän minkäänlaisia riskejä.

Annamme mielellään lisää tietoa tutkimukseemme liittyen.

Jyväskylä 4.4.2011

Mari Lehtinen, liik. yo

Prof. Taru Lintunen

Tel: 040- 5764118

Tel: 040-7532158

Email: mari.j.lehtinen@gmail.com

Email: Taru.Lintunen@jyu.fi

## Appendix 2

Information consent form, for athletes

**Suostumuslomake**

Nuorten uimareiden urheiluvammat -tutkimus

Minä \_\_\_\_\_  
 olen lukenut tutkimusta esittelevän lomakkeen ja minulla on ollut mahdollisuus keskustella tutkimuksen edustajan kanssa. Suostun osallistumaan tutkimukseen tietäen, että voin milloin tahansa, syytä kertomatta vetäytyä pois tutkimuksesta. Vetäytyminen tutkimuksesta ei tule mitenkään vaikuttamaan kohteluuni, jatkooni tai harjoitteluuni . Vastaan kaikkiin kysymyksiin omasta halustani.

Tutkittavan allekirjoitus ja  
 nimenselvennys.....

Päivämäärä  
 .....

## Appendix 3

## Information consent for parents

**Suostumuslomake huoltajille**

## Nuorten uimareiden urheiluvammat -tutkimus

Minä \_\_\_\_\_  
\_olen lukenut tutkimusta esittelevän lomakkeen ja minulla on ollut mahdollisuus keskustella tutkimuksen edustajan kanssa. Huollettavani voi osallistua tutkimukseen. Tiedän, että hän voi milloin tahansa, syytä kertomatta vetäytyä pois tutkimuksesta. Vetäytyminen tutkimuksesta ei tule mitenkään vaikuttamaan kohteluun, jatkoon tai harjoitteluun.

Huoltajan allekirjoitus ja nimenselvennys

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Päivämäärä

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## Appendix 4

### Themes for interview

## **Teemahaastattelu**

### **1. Urheilu-ura ennen vammautumista**

- Kuvaile elämäntilanteesi ennen vammautumista: henkiset –ja fyysiset resurssit, perhe, opiskelu, ystäväsuhdeet, seurustelu?
- Kuvaile suhdettasi joukkueovereihin ennen vammautumista
- Kuinka sinun ja valmentajan välinen rooli oli toiminut ennen vammautumista?
- Kuvaile harjoittelumääriä ennen loukkaantumista
- Kuinka määrittelisit henkisen vireytesi juuri ennen vammautumista?
- Mitkä olivat urheilulliset tavoitteesi ennen vammautumista?

### **2. Vammautuminen**

- Miltä vammautuminen tuntui henkisesti? Kuvaile ensireaktioita omin sanoin.
- Kuinka määrittelisit henkisen vireytesi vammautumisen aikana?
- Kuinka joukkuekaverisi ja valmentajasi reagoivat vammautumiseen?
- Tuliko vammautumisen aikana pelko urheilullisten tavoitteiden menettämisestä?

### **3. Kuntoutus**

- Millaiset puitteet kuntoutuksessa oli?
- Tunsitko saavasi tarpeeksi psyykkistä valmennusta kuntoutuksen aikana?
- Kuinka joukkuekaverisi ja valmentajasi tukivat sinua kuntoutuksen aikana?
- Kuinka määrittelisit henkisen vireytesi kuntoutumisen aikana?
- Palautuiko kuntoutuksen aikana usko urheilullisten tavoitteiden uudelleen saavuttamiseksi?



#### **4. Urheilu-ura kuntoutuksen jälkeen**

- Kuinka määrittäisit henkisen vireytesi kuntoutumisen jälkeen?
- Millaiseksi olet kokenut roolisi joukkueeseen ja valmentajaan kuntoutuksen jälkeen?
- Mitkä olivat urheilulliset tavoitteesi kuntoutuksen jälkeen?
- Tunnetko pelkoa loukkaantuvasi uudelleen?
- Onko sinulla jotain tulevaisuuden suunnitelmia urheilun alueella?