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Psychological skills, mental toughness and performance anxiety among Icelandic youth international soccer players

A longitudinal study

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Leiðbeinandi: Hallur Hallsson

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Abstract

In this study, Icelandic youth international soccer players were asked to answer a questionnaire that measured psychological skills, anxiety, and mental toughness. The questionnaire was submitted at two different points of time, once in 2018 and again in 2021. The first aim of the study was to see if players who better utilize psychological skills have lower anxiety and higher mental toughness than those who utilize them less. The second aim was to see if players who start more games have lower anxiety, higher mental toughness, and utilize better psychological skills. The third aim was to investigate if higher skilled players had improved more in psychological skills and mental toughness, and had less performance anxiety compared to those who were not regular starters on their teams. Psychological skills were measured using the *Test of Performance Strategies (TOPS)* scale, performance anxiety was measured using the *Sports Anxiety scale-2 (SAS-2)*, and mental toughness was measured using *The Sport Mental Toughness Questionnaire (SMTQ)*. The results showed that the better use of psychological skills was negatively correlated with performance anxiety and was positively correlated with mental toughness. Also, the better use of psychological skills in 2018 was negatively correlated with performance anxiety in 2021. No significant correlation was found between better use of psychological skills in 2018 and mental toughness in 2021. The starters were significantly better than non-starters in utilizing psychological skills; relaxation and emotional control during competition in 2018 and automaticity in 2021. Regarding mental toughness, starters scored significantly higher in the control subscale in 2018. Starters had also improved significantly more in the psychological skills; activation and relaxation during competition and negative thinking during practice. No significance was found in improvement of performance anxiety in 2021 compared to 2018 in either group. In regards to mental toughness, starters significantly improved in the control subscale from 2018 to 2021.

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Many people have had or still have a dream of becoming an elite athlete. Young kids grow up watching world-famous athletes and want to be like superstar athletes such as Michael Jordan, Lionel Messi, LeBron James, Cristiano Ronaldo, and Serena Williams. To become an elite athlete, you will need certain physical capabilities that have been well documented. But that in itself is not enough (Pandey et al., 2016). Many professional athletes and coaches acknowledge the importance of psychological skills and their effects on performance. However, how much of an effect there is varies between sports (Weinberg & Gould, 2019). A great deal of research has been done on the importance of psychological factors on performance in sports (e.g. Brown & Fletcher, 2017; Sheard & Golby, 2006; MacNamara, et al., 2010). Most people think they know what defines an elite athlete. But what exactly is it? Great athleticism? Mental toughness? Or is it a combination of physical and psychological factors?

One way to get closer to answering these questions is to carry out a longitudinal study. This is because it lets the researcher see and understand what and how much change happens over the period of time the study occurs. But despite all the interest in the effects of psychological skills on performance and development of elite athletes, there seems to be a lack of longitudinal studies on the subject (Crust, 2008). This is likely due to the high cost and time this method of research takes (Caruana, et al. 2015). In his review and re-examination of mental toughness, Crust (2008) says that more longitudinal studies are needed to help establish how mental toughness changes over time and to determine important developmental periods. In the modern world of sport, the lack of long-term athlete monitoring is leading to less long-term development in favor of short-term identification. Longitudinal assessment of athletes would allow sports practitioners to better assess athletes' physical and psychological skill progress, which could lead to better development (Burgess & Naughton, 2010).

One of the longitudinal studies on the effects on sports performance is a 15 year study of young male football players. There the researcher found that goal commitment, engagement in problem-focused coping behaviors and social support seeking seemed to predict success in the sport (Yperen, 2009). In another study, Elferink-Gemser et al. (2007) conducted a 2-year longitudinal study on youth field hockey players. The aim of their study was to pinpoint what factors could assist in predicting future elite players. They compared elite players with sub-elite players and their results showed that elite players showed higher confidence and motivation compared to the sub-elite as well as better technical skills and endurance.

This introduction will discuss a few psychological factors that may influence success in sport and sports performance.

Anxiety

One of the most innate human instincts is fear. It is the organism's response to an objectively threatening incident or thing. The body responds both physically and psychologically to the threat by activating the fight-or-flight response which will then activate the autonomic nervous system and the adrenal-cortical system (hormones). Often the threat's severity and the fear coincide with each other and when the threat has passed, the fear response will also cease. Anxiety is when the fear is out of proportion to the threat and lingers long after the threat has subsided (Nolen-Hoeksema, 2014). Thus, anxiety is an emotional state which coincides with bodily arousal and is perceived to be negative by the person experiencing it (Weinberg & Gould, 2019).

Two divisions to anxiety are the somatic and cognitive components. Somatic anxiety is how much a person perceives the body's physical arousal; elevated heartbeat, sweat, muscle tension, breathing, etc. Cognitive anxiety is the psychological element like thoughts, emotions, and feelings that are negative (Weinberg & Gould, 2019). Spielberger (1966) further defined anxiety as trait and state anxiety. Trait anxiety is part of a person's personality and is on a scale from low to high. Those that are high on trait anxiety have a behavioral tendency to perceive incidents to be dangerous and experience a somatic and/or cognitive reaction, even if the incident does not appropriate the dangers' severity. State anxiety is a moment-to-moment change in arousal depending on how the person perceives their subjective somatic and cognitive state (Spielberger, 1966). A person that is high in trait anxiety is also often high on state anxiety, that is because trait- and state anxiety normally coincide together (Broadbent & Broadbent, 1988; Horikawa & Yagi, 2012).

Anxiety's effect on athletes

Arousal is defined as a person's inner psychological and physiological state and it refers to how much intensity of motivation a person has each moment. The intensity dimension falls along a spectrum, from low arousal (e.g., sleeping) to high arousal (e.g., your team winning). Arousal is not specified to be either negative or positive, and it is not affiliated with events that are either or (Weinberg & Gould, 2019).

The effects of anxiety on performance have been a topic of many research papers through the twentieth century. Theories have been formed to try explain the relationship between anxiety and arousal, and how that relationship affects performance (Jones, 1995). As mentioned earlier, anxiety is most often perceived as a negative emotional state. In a meta-analysis of forty-three research papers, Woodman and Hardy (2003) found a significant negative correlation between state cognitive anxiety and performance in sport. Therefore, it makes sense that it is harmful to an athlete's performance or being debilitating. However, that is not always the case as an athlete sometimes finds it to enhance performance or being facilitative (Jones, 1995; Jones et al, 1994). This all depends on the level of anxiety and how the person interprets it. How athletes interpret it depends on the beliefs they have in their ability to execute their goal or specifically, how much perceived control they have over their performance (Jones, 1995; Hanton & Connaughton, 2002). This may explain why Jones et al. (1994) found no differences in the amount of somatic and cognitive anxiety of elite swimmers compared to non-athletes. However, the elite athletes saw the symptoms of cognitive anxiety more positively in regards to how it would affect performance. In another study on 199 collegiate and club players in all kinds of sport, Hanton, et al. (2003) found that the higher skill level an athlete had was positively correlated to how much an athlete experienced anxiety to be facilitating. Similar results were found in a study of female gymnasts (Jones, et al., 1993). Most often, athletes who see anxiety as facilitative will label the feeling of anxiety as being "psyched up" and "motivative". Further, if they feel negative, they are better prepared to change that with efficient mental skills (Jones, et al., 1994). Other studies have also supported this (Jones et al., 1993; Jones & Swain, 1992). In a study of national table tennis players, those who found anxiety facilitating performed better than those who found it to be debilitating, and players felt their feeling of anxiety to be more debilitating when they were losing compared to when they were winning (Martinent & Ferrand, 2015).

The reason both cognitive and somatic anxiety facilitates and debilitates performance was well analyzed retrospectively in a study on elite and sub-elite swimmers by Hanton, et al. (2002). For elite swimmers, cognitive symptoms facilitated performance when the athlete's thoughts and concerns about upcoming competition were conditioned to past performances where they performed well and, therefore, would perform well again. Elites also had different methods to reduce these negative thoughts. For sub-elite athletes, cognitive symptoms facilitated performance by forcing the athlete to try to outperform and try their best through

increased motivation so they would not disappoint themselves or others. Somatic symptoms that facilitated elite athletes' performance was, among other things, relaxation in the body that increased automaticity. Also, like with the cognitive symptoms, there were somatic symptoms like "butterflies in the stomach" and "nerves" that had been conditioned to performances where they performed well. This made them feel adrenaline rush that made the athletes more prepared. Sub-elite athletes' somatic symptom was "increased heart rate" that provided energy to their muscles. Some said they identified their somatic symptoms to the symptoms they felt in a previous performance that went well. Among the cognitive symptoms that debilitated performance was "self-doubt", which then led to negativity and lack of focus. Other things include overthinking, loss of automaticity, and fear of failing. Sub-elite athletes mentioned a lot of the same things as elites that debilitated their performance; all-around negativity, overthinking, and doubt about themselves. Somatic symptoms that debilitated elites were a tight body, which made it hard to relax, and then there were symptoms that they had not experienced while they performed well and, therefore, made them have debilitating thoughts. With sub-elite athletes, much was the same as the elites, somatic symptoms like tension and tightness, and negative feelings made them think negatively.

One of the theories on the relationship between arousal and performance asserts that there are individual differences that can be considered regarding the relationship between performance and arousal. Yuri Hanin (1980) made the model of individual zones of optimal functioning (IZOF). The model proposes that each athlete has a zone of their optimal level and intensity of arousal or state anxiety where they perform their best. If they are out of their zone, then their state anxiety is not at an optimal and, therefore, they will lack in performance. Later Hanin (2000; 2007) expanded the model to fit other emotions. So, for athletes to be at their optimal functioning, they will also have to be at an optimal level of other emotions. Both negative and positive emotions can be either beneficial or detrimental to the performance. Research has supported the model (Gould & Tuffey, 1996; Hanin, 2007) and it is one of the most used models to study athletic performance-related subjective experiences with over one hundred eighty-three publications based on it (Ruiz et al., 2017).

Athletes' performance strategies

Sports scientists, coaches, and athletes all agree that psychological skills alongside technical, tactical, and physical skills are imperative to optimal performance (Gucciardi et al., 2016). Like

physical skills, psychological skills can be taught, practiced, and learned. There are multiple types of psychological skills in the sport psychology literature, such as, self-talk, emotional control, automaticity, goal-setting, activation, imagery, relaxation, and attentional control (Weinberg & Gould, 2019). A study by Neil et al. (2006) showed that using psychological skills helped lower anxiety levels and increase self-confidence. Miçoogullari and Ekmekçi (2017) found that mental toughness, as well as other things, increased for professional soccer players who took part in a 16-week psychological skill training (PTS) program.

Self-talk

Throughout the psychological literature, multiple terms have been used to describe constructs that are the same as or similar to certain automatic thoughts or internal dialogue. In sport psychology, the term self-talk has triumphed over others (Murphy, 2012). Self-talk is a mental technique that athletes use as a means to affect behavior, thoughts, and feelings, either intentionally or unintentionally. There are many different types of self-talk such as, positive, negative, motivational, and instructional (Walter et al., 2019). Self-talk can be used to increase motivation, improve confidence, regulate arousal levels, put a stop to bad habits, bolster athletes' efforts, and help with learning new skills (Weinberg & Gould, 2019). Hatzigeorgiadis et al. (2011) conducted a meta-analysis on self-talk and performance in sport which suggest that multiple types of positive self-talk can improve performance. Other research has shown that self-talk can help with building confidence, lowering anxiety, and enhancing performance in various sports including basketball, tennis, football, skiing, ice hockey, water polo, and pole vaulting (Stamou et al., 2007).

Emotional control

An emotion is an individual's attempt to deal with a personally significant matter or event through a dynamic reaction pattern involving experiential, behavioral, and physiological elements (American Psychological Association, n.d). For example, winning a game, scoring a goal, earning a medal, and anger towards a negative comment made by an opponent (Murphy, 2012). Emotions can have a large impact on performance both in training and during a competition, thus focusing on improving emotional control can lead to better performance (Jones, 2003). Research has shown that being anxious has a negative effect on the performance of swimmers (Burton, 1988). A study of the U.S. Olympic wrestling team that competed in the

Seoul Olympics in 1988 demonstrated that before their worst matches wrestlers were less confident, felt inappropriate feelings and negative thoughts. Compared to their best matches where they felt confident and fully focused (Gould et al., 1992). Even though positive emotions are largely considered to have a favorable effect on performance, that is not always the case. Positive emotions do not always lead to improved performance and negative emotions do not always have negative effects on performance. For example, anxiety is a negative emotion that has regularly been linked with improved performance. Thus, emotional control and regulation are important for an athlete's performance and success (Murphy, 2012).

Goal-setting

A large percentage of psychological studies have shown that setting goals has a powerful and consistent positive effect on behavior (Weinberg & Gould, 2019). Setting goals can benefit athletes by helping them with motivation, confidence, and focus (Dohme et al., 2019). Within the sport psychology literature goals have often been divided into three types: outcome goals, performance goals, and process goals. Outcome goals focus on a certain outcome, such as finishing first in a race. Performance goals focus on attaining a certain personal goal, compared with previous performance, like trying to improve a marathon time by two minutes. Process goals center around certain actions an athlete needs to execute well to improve performance, for example, an Olympic weightlifter going slowly through a certain movement trying to maintain good form (Weinberg & Gould, 2019). Setting long and short-term goals is also important as they can help motivate athletes and improve performance. People often struggle with long-term goals due to how distant in time they seem. That is where setting short-term goals come in handy, setting them to move continually closer to the long-term goal (Locke & Latham, 1985). Another way to look at goals is as either objective or subjective. Objective goals focus on getting a certain result, usually within a specific timeframe. Subjective goals are not as concrete or measurable and are more general, like "I want to enjoy myself" (Weinberg & Gould, 2019).

A review of multiple studies on goal-setting and its effect on performance has shown that goals that provide a challenge and are specific can lead to improved performance (Locke et al., 1981). It is best to set moderately difficult goals rather than too easy or too difficult. Setting moderately difficult goals helps to increase performance. Setting goals that are too hard can have negative effects on an athlete's motivational levels (Burton & Raedeke, 2008). A study

made by Sertaç Erciç (2018) showed that compared to non-elite athletes, elite athletes scored higher in goal-setting and other psychological skills such as imagery, activation, and relaxation. A study by Lerner et al., (1996) showed that setting goals before a practice session led to improved performance. Basketball players who set goals before practice scored more free throws compared to players who did not set any goals. In another study by O'Brien et al. (2009) on elite and non-elite boxers, after a goal-setting intervention, elites improved more in targeted behaviors, interpreted anxiety symptoms as more facilitative, and showed more confidence, compared to non-elites. A study by Cleary and Zimmerman (2001) demonstrated that elites had more process-orientated and distinct goals compared to non-elites.

Automaticity

Automaticity refers to being able to do things without really thinking about them (Singer, 2002). It is believed to improve the execution of efficient and smooth skills by allowing athletes to direct their concentration on strategic elements instead of mechanical (motor movements). Focusing on motor movements can interfere with performance and skilled movements (Toner et al., 2015). Automaticity and positive emotions have often been linked together with peak athletic performances, negative emotions are also said to have a diminishing effect on automaticity. Elite athletes often show better emotional control compared to novices and that could be a factor in why they seem to be able to better use automaticity to improve their performance (Vast et al., 2011).

In a 2014 study, Ruth Anderson et al. explored psychological states and peak performance in Olympic and world championship athletes. The athletes and coaches were interviewed regarding the athletes' peak performance and which psychological state can lead to it. The result showed that automaticity is a psychological state that plays a role in the peak performance of elite athletes. Another study by Hayslip et al. (2010) which looked at amateur golfers competing at an amateur golf championship, displayed similar results, automaticity was one of the factors that predicted better performance.

Imagery

Imagery is a mental skill that can be refined with repetition. It is when one uses his senses to create or re-create an experience in his mind (Williams, 2014). Many top-level athletes have described the importance of using imagery and the positive effect it has on performance (Cumming & Williams, 2012). Imagery has been shown to improve learning, sports

performance, emotions, and thoughts (Williams, 2014). All the senses can be involved during imagery, the more the better, because using multiple senses can help add realism to the experience (Weinberg & Gould, 2019).

Tailoring an imagery training program to the abilities, interests, and needs of each athlete is important. When athletes have personalized programs that cater to their needs, it will lead to more enjoyment and the athlete will find it easier to perform (Cumming & Ramsey, 2009). Holmes and Collins (2001) created a model that has guidelines for increasing imagery effectiveness called PETTTLEP. It is an acronym for physical, environment, timing, task, learning, emotion, and perspective. “Physical” refers to the athlete focusing on his or her physical movements during the imagery session. “Environment” refers to having the environment as close to real-life as possible. “Task” refers to the athlete trying to perform the task as similarly as he or she would do in real life. “Time” refers to trying to make everything take the same amount of time in the imagery session as it would in real life. “Learning” refers to improving oneself and adjusting the imagery according to their current skill level. “Emotions” refers to experiencing emotions that happen in real-life scenarios, like happiness, frustration, and anxiety in the imagery scenario. Finally, “perspective” refers to seeing the imagery scenario from an internal first-person perspective or an external third-person perspective.

Studies on the PETTTLEP model have yielded positive results. A study done by Wakefield and Smith (2011) showed that using the PETTTLEP model improved performance. Furthermore, increased use of imagery had a larger effect on performance. A recent study made by Yadolahzadeh (2021) on young female swimmers demonstrated how effective imagery can be to enhance performance. In the study, a combination of stress training and imagery led to significant improvement in performance. A systematic review by Multhaupt and Beuth (2018) showed that imagery can help athletes retain self-esteem, motivation, and increase positivity during an injury rehabilitation process.

Relaxation

Relaxation has been shown to combat the negative effects that stress and anxiety have on athletes (Parnabas et al., 2014.). Relaxation is used to lower the activation of the sympathetic nervous system by calming the mind and decreasing undesirable muscle tension. Activation of the sympathetic nervous system leads to the fight or flight response, which generates physical

symptoms of stress like perspiration, increased heart rate, and muscle tightness (Burton & Raedeke, 2008). Studies have shown that successful athletes are more likely to use relaxation techniques compared to those who are less successful (Parnabas et al., 2014.). The mind and the body often work in cohesion, so focusing relaxation on one of them often leads to the relaxation of the other (Burton & Raedeke, 2008).

Research on the use of meditation has shown that athletes who use meditation have exhibited improved performance, less self-reported tension, and their lactate levels were lower compared to control groups (Weinberg & Gould, 2019). There are techniques used primarily to relax the body like progressive muscle relaxation (PMR) and diaphragmatic breathing. PMR is when a person focuses on contracting and releasing one muscle group at a time progressively, starting with the largest and ending with the smallest. This helps by reducing the tension in the muscles (Ghafari et al., 2009). Diaphragmatic breathing is a breathing technique which involves contracting the diaphragm muscle to move oxygen downward into the body, which leads to more efficient exhalation (Chen et al., 2017). There are also relaxation techniques that focus mainly on the mind, like meditation and imagery. Athletes can find that both approaches can be helpful (Burton & Raedeke, 2008). A study by Navaneethan and Rajan (2010) on male college volleyball players showed that compared to a control group, players who received progressive relaxation training performed better when answering questionnaires regarding self-confidence, both cognitive and somatic anxiety

Activation

According to Thomas et al. (1999) activation refers to elevating the psychological and physiological energy of an individual. Activation is also known in sport psychology literature as psyching up or energizing (Weinberg & Gould, 2019; Burton & Raedeke, 2008). It has been called the opposite of relaxation. It assists the body in getting ready for top performance. Athletes can use activation techniques to increase their respiration and heart rate, boost brain activity, and vitalize blood flow to the muscles (Burton & Raedeke, 2008). Many athletes tend to use activation to improve performance (Lee, 1990). There are various activation techniques like music, breathing techniques, and imagery. Like with other performance strategies, athletes need to find the right activation technique that fits their needs (Burton & Raedeke, 2008). Research has shown that activation or psyching up techniques can help weightlifters improve their performances (Shelton & Mahoney, 1978; Gould et. al., 1980; Lee, 1990).

Many studies over the years have highlighted the effects of being well trained in psychological skills. It can separate successful athletes from less successful (Weinberg & Gould, 2019). However, different types of sports have a different emphasis on what psychological skills are best applied to maximize performance. Athletes in team sports like football may not benefit from the same psychological skills training that an individual sport athlete, like a golfer would. Individual athletes depend mostly on themselves to perform at their best, while team athletes must also depend on their teammates (Ismail, 2019).

Mental toughness

Mental toughness is a well-known term in sport psychology, it has been widely researched in many studies. There are however still concerns regarding the measurement and conceptualization of mental toughness (Gucciardi, 2017). In an effort to clear these concerns Jones et al. (2008) tried to produce a definitive definition of the term, using the personal construct theory as guidance (Kelly, 1955). Their definition of mental toughness subsisted on a natural or developed psychological advantage that permitted mentally tougher performers to remain determined, confident, focused, and handle pressure, more so than their opponents (Connaughton et al., 2008). Gucciardi et al. (2008) define mental toughness as a combination of values, emotions, behaviors, and attitudes that allow an athlete to overcome obstacles, pressure, and adversity that he or she may face. But also, to keep motivation and concentration levels high while results are positive so the athlete can consistently achieve his or her goals. Loehr (1986) said that those who are mentally tough are meticulous thinkers who respond positively to pressure so they can stay calm and relaxed (Jones, 2002). So, although the definition of mental toughness varies in different ways, it usually involves an athlete's ability to rebound from failure, cope with pressure, focus, and the ability to keep going in the face of adversity (Weinberg & Gould, 2019).

Mental toughness's effect on performance

A study made by Cowden et al. (2016) with South African tennis players, explored the dynamic between mental toughness, stress, and resilience. There were three hundred fifty-one athletes in total who took part in the study. Their skill varied from country club tournaments to international tournaments. They all answered three questionnaires: *The Resilience Scale for Adults*, *Sports Mental Toughness Questionnaire* and, *The Recovery-Stress Questionnaire for Athletes*. The results showed that mental toughness and stress are negatively correlated. This

was in line with previous studies that report that mentally tougher athletes experienced lower stress levels or perceived events to be less stressful than less mentally tough athletes (Middleton et al., 2004; Kaiseler et al., 2009; Cowden et al., 2016).

Another study by Crust and Clough (2005) examined the correlation between physical endurance and mental toughness. Forty-one male students were asked to hold a dumbbell suspended at a certain angle for as long as they could. The participants were then asked to answer *The Mental Toughness 48*. The study's findings showed that there was a positive correlation between scores on the questionnaire and time holding the dumbbell (Crust & Clough, 2005). Bell et al. (2013) conducted a longitudinal study on young exceptional cricketers. The goal of the study was to assess the effect of a mental toughness intervention. The results from the study showed that an intervention can have a positive effect on mental toughness which can then lead to improved performance. This effect could be the difference between a win and a loss (Bell et al., 2013). Studies on soccer players have exhibited significant differences in mental toughness between players in the top division and players in the lower divisions. Those playing in the top division displayed more mental toughness (Danielsen et al., 2017; Guillen & Santana, 2018).

The present study

The focus of this longitudinal study is to study how psychological factors develop over time and what psychological factors can help predict athlete's ability level. In the present study, we investigate if there is a link between the use of psychological skills, anxiety during sports, and mental toughness. The first hypothesis is that better use of psychological skills correlates with lower levels of anxiety and higher levels of mental toughness. Likewise, the better use of psychological skills in 2018 correlates to lower levels of anxiety and higher levels of mental toughness in 2021. The second hypothesis is that players that are more often in the starting lineup for their teams, are mentally tougher and have lower levels of anxiety, and have better usage of psychological skills and strategies compared to those who start less regularly. The third hypothesis is that higher skilled players will improve more in psychological skills and mental toughness, and will have less performance anxiety compared to those who are lower skilled between the years 2018 and 2021.

Method

Participants

Twenty-one male Icelandic national football team players, under nineteen years of age (U19), participated in this study. All participants were born between the years 2001 and 2002, so being nineteen and twenty years old when the last questionnaire was sent out. A total of thirty-four participants answered the first questionnaire and twenty-one participants answered the second. The total response rate was 61,76%.

Measures

Three self-assessment scales measuring athlete's use of psychological skills, mental toughness, and performance anxiety. Likewise, they were asked how often they are in the starting line-up for their team (see Appendix A).

Test of Performance Strategies. Psychological skills were measured using the *Test of Performance Strategies (TOPS; Thomas, et al. 1999)*. Since all subjects were Icelandic the participants answered a translated version of the test (see Appendix B). TOPS is a 64-item self-report instrument that uses a 5 point-scale; (1) never, (2) rarely, (3) sometimes, (4) often, (5) always. It has eight subscales that focus on competition strategy and eight subscales that focus on practice strategy. The same questions were for practice on the one hand and competition on the other, but the only difference being switching the words "practice" and "competition". Except for the subscales "negative thinking" and "attentional control" who are only in practice and competition respectively. Each subscale consists of 4 items. The competition subscales are self-talk (e.g. "I set very specific goals for competition"), emotional control (e.g. "my emotions get out of control under pressure of competition"), automaticity (e.g. "During competition, I don't think about performing much - I just let it happen"), goal-setting (e.g. "I set very specific goals for competition"), imagery (e.g. "I rehearse my performance in my mind at competitions"), activation (e.g. "I do what needs to be done to get psyched up for competitions"), relaxation (e.g. "I am able to relax if I get too nervous at a competitive performance), and negative thinking (e.g. "My self-talk is negative"). The practice strategy subscales are goal-setting, emotional control, automaticity, relaxation, self-talk, imagery, attentional control, and activation (Thomas, et al. 1999). Thomas et al. (1999) showed that TOPS was a sufficient test for assessing the effectiveness of psychological skills training intervention for athletes.

Sport Anxiety Scale. Somatic and cognitive trait anxiety that athletes experience before and during performance settings was measured using *Sport Anxiety Scale-2 (SAS-2)* (Smith, et al., 2006). The questionnaire was translated directly to Icelandic by three specialists in psychology according to the method of McKay et al. (2006) and prepared according to the methods of Harkness and Schoua-Glusberg (1998) (see Appendix C). The scale has 15 statements on a 4-point scale: (1) not at all, (2) a little bit, (3) pretty much, (4) very much. The scale is divided into three subscales; somatic anxiety symptoms (e.g. “Before or while I compete in sports my body feels tense”), worries (e.g. “Before or while I compete in sports I worry that I will not play well), and concentration disruption (e.g. “Before or while I compete in sports it is hard to concentrate on the game”). Each with five items (Smith, et al., 2006).

The Sport Mental Toughness Questionnaire. The Sport Mental Toughness Questionnaire (SMTQ) was used to measure athletes’ mental toughness (Sheard, et al., 2009). It measures an athlete’s belief in their ability to achieve their goals, their determination, and how much control they have on how far they can get (Sheard, et al., 2009). The questionnaire was translated from English to Icelandic (see Appendix D). It is a 14-item self-report instrument on a 4-point scale from (1) “not very true” to (4) “very true”. The test itself has 3 subscales; control, constancy, and consistency. Control (e.g. “I worry about performing poorly”) has 4 items, confidence (e.g. “I interpret potential threats as positive opportunities” has 6 items, and constancy (e.g. “I am committed to completing the tasks I have to do”) has 4 items (Sheard, et al., 2009).

Research design

This study was longitudinal with the questionnaire being answered for the first time in 2018 and for a second time in 2021.

Procedure

In 2018 researchers visited the national team during practice and explained the purpose of the research. The participants were then asked to answer the questionnaire. In 2021, after receiving the names of participants from the previous part of the research, researchers contacted participants through Facebook Messenger on the 25th of March 2021. Due to the Covid-19 pandemic, meeting them in person was not a possibility. They were informed about the study and received a link to the online questionnaire. On the first page of the questionnaire there was

important information and instructions such as, all data is confidential, no harm can come from participation, there are no “wrong” or “right” answers, and that participants can choose to quit the study whenever they want with no repercussions (see Appendix E).

Statistical Analysis

The statistical analysis was performed using the statistical software SPSS version 27.0 by IBM. Participants were divided into two groups, starters and non-starters, according to their answer to the question “how often are you in the starting lineup for your team”. This question was only asked in the latter questionnaire. This is to differentiate the skill level of the players. With these two groups, it is possible to see if the skill level of the player is a factor in using psychological skills, having lesser performance anxiety, and more mental toughness. The question was on a 7-point scale. Those who answered “always”, “most often” or “quite often” were labeled as “starters” and those who answered “neither often nor rarely”, “quite rarely”, “very rarely” or “never” were labeled as “non-starters”. Eleven participants were in the “starters” group and five in the “non-starters” group.

Linear regression was used to see the relationship between the scales, both within the same year, both 2018 and 2021. Also, to check for improvement between the years. To test for significance between starters and non-starters on both the 2018 and 2021 questionnaires, an independent sample *t*-test was utilized. For this, the groups starters and non-starters were grouped together. Finally, a paired-samples *t*-test was used to check for differences in means between the answers on the questionnaires’ subscales taken in 2018 and 2021, to see which group showed more improvement and where it lies.

Not all the participants answered how often they are in the starting line-ups, the number of missing cases was five, for the total of participants being sixteen when using that variable.

Results

Descriptive statistics

The mean and standard deviation of the subscales of the TOPS scale for the starters and non-starters in 2018 and 2021 questionnaires are displayed in table 1. The same goes for SAS-2 and SMTQ, the are displayed in table 2 and table 3 respectively.

Table 1 shows that starters generally have higher or similar mean scores than the non-starters on TOPS, with a few exceptions like relaxation during competition in 2018 and goal-setting during practice in 2021. Starters tend to have lower mean scores in 2021 compared to 2018, with automaticity during practice and competition being an exception. Non-starters also had lower mean scores in 2021 compared to 2018, with relaxation during practice and competition being an exception.

Table 2 shows that starters had lower mean scores than non-starters both in 2018 and 2021 on all the subscales. Both groups had higher mean scores in 2021 compared to 2018 on all the subscales.

Table 3 shows that starters had higher mean scores in 2018 compared to non-starters. In 2021 starters had a higher mean score only in confidence, on the other subscales, non-starters scored higher. Starters had lower mean scores in 2021 compared to 2018 on all of the subscales. Non-starters had a lower mean score in only confidence in 2021.

Table 1. Descriptive statistics for starters and non-starters in 2018 and 2020 on TOPS. Both during practice (PR) and competition (COM).

TOPS	Starters 2018 Mean (SD)	Starters 2021 Mean (SD)	Non-starters 2018 Mean (SD)	Non-starters 2021 Mean (SD)
Activation (PR)	13.36 (3.64)	10.82 (3.13)	12.00 (3.24)	10.20 (2.38)
Activation (COM)	18.82 (1,33)	15.27 (2,97)	15.60 (3.05)	12.40 (3.05)
Relaxation (PR)	8.73 (3.44)	7.73 (2.83)	12.20 (3.70)	15.27 (2.97)
Relaxation (COM)	16.91 (1.76)	14.55 (2.54)	13.20 (2.39)	14.20 (3.70)
Imagery (PR)	12.46 (4.46)	12.90 (4.11)	12.60 (1.53)	10.60 (3.57)

Imagery (COM)	13.18 (2.82)	11.91 (3,02)	13.40 (2.19)	12.00 (1.87)
Goal-setting (PR)	13.36 (4.95)	11.09 (4.32)	13.80 (3.03)	13.00 (3.67)
Goal-setting (COM)	15.36 (3.98)	13.55 (5.66)	14.40 (3.91)	13.60 (3.50)
Self-talk (PR)	14.46 (3.20)	13.36 (3.80)	14.00 (3.81)	12.60 (1.34)
Self-talk (COM)	13.82 (3.87)	12.09 (4.85)	13.20 (3.90)	11.40 (2.07)
Automaticity (PR)	14.91 (1.87)	15.64 (2.11)	13.29 (2.49)	12.60 (3.50)
Automaticity (COM)	11.82 (3.74)	12.36 (3.56)	11.20 (4.15)	9.80 (3.83)
Emotional control (PR)	15.27 (3.10)	13,18 (2.40)	13.20 (3.89)	13.20 (2.77)
Emotional control (COM)	16.64 (1.69)	15.00 (2.86)	13.80 (3.56)	13.80 (3.42)
Negative thinking (PR)	17.91 (1.45)	14.64 (1.91)	15.80 (3.49)	14.60 (1.94)
Attentional Control (COM)	9.00 (3.49)	9.00 (2.57)	9.20 (1.92)	8.80 (1.64)

Table 2. Descriptive statistics for starters and non-starters in 2018 and 2020 on SAS-2.

SMTQ	Starters 2018 Mean (SD)	Starters 2021 Mean (SD)	Non-starter 2018 Mean (SD)	Non-starters 2021 Mean (SD)
Confidence	17.91 (1.58)	16.18 (2.14)	14.00 (2.91)	13.60 (3.20)
Constancy	14.64 (1.69)	13.73 (1.56)	13.80 (2.38)	14.00 (1.87)
Control	14.64 (1.62)	12.73 (1.79)	12.60 (0.89)	13.60 (2.79)

Table 3. Descriptive statistics for starters and non-starters in 2018 and 2020 on SMTQ.

SAS-2	Starters 2018 Mean (SD)	Starters 2021 Mean (SD)	Non-starters 2018 Mean (SD)	Non-starters 2021 Mean (SD)
Somatic anxiety	6.91 (1.58)	8.09 (2.70)	8.40 (3.57)	9.00 (3.80)
Worry	8.09 (4.25)	8.46 (2.73)	8.20 (2.16)	9.60 (2.70)
Concentration distribution	6.00 (1.18)	5.73 (1.01)	6.80 (2.49)	6.40 (2.19)

Starters vs. non-starters

An independent sample *t*-test was used to check for a significant difference between the mean of the starters and non-starters on each subscale of TOPS, SAS-2, and SMTQ. The effect size was also checked with Cohen's *d*.

On the subscales of the TOPS scale for 2018, significance was found in relaxation during competitions, $t(14) = 3.511$, $p = 0.003$, with Cohen's *d* being 1.894. Emotional control during competition was also significant, $t(14) = 2.209$, $p = 0.044$, with Cohen's *d* being 1.191. Starters were significantly better than non-starters on both subscales

For the responses on the TOPS scale in 2021, significance was found on the subscale automaticity in competition, $t(14) = 2.176$, $p = 0.047$, with Cohen's *d* being 1.173. Starters were significantly better than non-starters.

On the SAS-2 scale, no significant mean difference in the mean was found both in 2018 and 2021.

On the SMTQ scale, only significance was found on the subscale "control" on the 2018 response, $t(14) = 2.59$, $p = 0.021$, with Cohen's *d* being 1.397. Starters being significantly better than non-starters.

2018 vs 2021

A paired-samples *t*-test was used to check for a significant difference between the mean scores on the subscales of TOPS, SAS-2, and SMTQ in the 2018 response to the mean score on the subscales in the 2021 response for both the starters and the non-starters.

No significant difference was found on any of the subscales of the questionnaires for the non-starters.

For the starters, significant mean difference was found on the TOPS's subscale activation in competition, $t(10) = -4.622$, $p = < 0.001$, with Cohen's *d* being 1.394. Also on the

subscale relaxation during competition, $t(10) = -3.357$, $p = 0.007$, with Cohen's d being 1.012. Starters were significantly better in 2021 compared to 2018 on those subscales. Finally, negative thinking during practice, $t(10) = -5.051$, $p = < 0.001$, with Cohen's d being 1.523. With starters having significantly less negative thinking in 2021 than in 2018.

For the subscales of the SAS-2 scale, there was no significant mean difference found.

For the SMTQ scale, there was a significant mean difference on the control subscale, $t(10) = 2.923$, $p = 0.015$, with Cohen's d being 0.881. Starters being significantly better in 2021 than in 2018.

The relationship between the scales

Linear regression was used to see if there were any relationships between psychological skills measured on the TOPS scale, performance anxiety measured on SAS-2 and mental toughness measured on SMTQ. For this, the groups starters and non-starters are grouped together. For the response in 2018, there was no significant correlation between TOPS and SAS-2, $t(20) = -2.023$, $p = 0.057$, $r = 0.177$. There was a significant positive correlation between TOPS and SMTQ, $t(20) = 2.773$, $p = 0.012$, $r = 0.288$. For the response in 2021, there was a negative correlation between TOPS and SAS-2, $t(20) = -4.977$, $p = < 0.001$, $r = -0.566$. Also, there was a significant positive correlation between TOPS and SMTQ, $t(20) = 5.160$, $p = < 0.001$, $r = 0.584$.

Linear regression was also used to see if there were any relationship between better use of psychological skills in 2018 and performance anxiety and mental toughness in 2021. Significant negative correlation was found between TOPS and SAS-2, $t(20) = -2.465$, $p = 0.023$, $r = -0.492$. There was no significant correlation found between TOPS and SMTQ, $t(20) = 0.897$, $p = 0.381$, $r = 0.202$.

Discussion

The purpose of the present study was to see if better use of psychological skills can have an effect on mental toughness and anxiety levels of Icelandic youth international soccer players. Another purpose was to see if those who were regular starters for their team, therefore, showing a higher skill level, better utilized psychological skills, had lower performance anxiety and more mental toughness than those who were not regular starters. The third purpose was to see if participants' scores had changed between years and if there were any differences in this change depending on their skill level.

Results partly supported the first hypothesis. They showed that in 2018 the better use of psychological skills and strategies a player had, the more mental toughness he had. In 2021 the results showed that better use of psychological skills and strategies a player had, the less performance anxiety and more mental toughness he had. So those players who better utilize psychological skills seem to have lower performance anxiety and higher mental toughness. This is in accordance with the results of Neil et al. (2006) and Miçoogullari & Ekmekçi, (2017), who showed that using psychological skills can help lower anxiety and increase mental toughness.

The second hypothesis was supported by the results. In 2018 players who were more often in the starting lineup for their teams, better utilized psychological skills that involved relaxation and emotional control during competition. In 2021, starters better utilized psychological skills that involved automaticity in competition compared to non-starters. So higher skilled players seem to have better use of certain psychological skills like relaxation, emotional control, and automaticity compared to those of a lower skill level. When it came to performance anxiety there was no difference found between starters and non-starters. Regarding mental toughness the only difference was found in how much control a player feels he has. So more skillful players seem to have more feel of control than lower skill players. These results follow other studies saying that there is a difference in emotional control, relaxation, and automaticity between athletes of different skill levels (Parnabas et al., 2014; Jones, 2003; Vast et al., 2011). These results are however not in line with Erciş (2018) saying that higher-skilled athletes differ from those at a lower skill level, in multiple psychological skills, like imagery and activation. These results are also in line with the Jones et al. (1994) that says that there is no difference in anxiety levels in elite and sub-elite players. The results are likewise slightly consistent with other studies saying that higher-skilled athletes have more mental toughness than those with lower skill levels (Danielsen et al., 2017; Guillen & Santana,

2018). It is also in line with Jones (1995) and Hanton and Connaughton (2002) the amount of control a player perceived to have, depends on their skill level.

The third hypothesis was partly true. For lower skilled players there was no difference found between their scores in 2018 and 2021 for psychological skills, performance anxiety, and mental toughness. For the higher skilled players there was also no difference regarding performance anxiety. There was however, improvement over the years in the psychological skills that involve relaxation and activation during competition compared to lower skilled players. Higher skilled players also experienced less negative thinking in 2021 compared to 2018. Regarding mental toughness, there was also improvement in how much control a player feels he has over the years. So higher skilled players seem to show more improvement on some parts of psychological skills and mental toughness compared to those of a lower skill level. This is also in line with Parnabas et al. (2014) study likewise for the second hypothesis.

Looking at the limitations of the current study, there were a few worth mentioning. The study only consisted of twenty-one participants. Of those participants only sixteen were eligible to be in the groups, starters and non-starters due to not having a full response rate on that question. This gave the research low statistical power. There is also a total of twenty-two subscales between TOPS, SAS-2 and SMTQ with all of them being used twice. That means that there are a lot of statistical comparisons, so getting a significant difference by chance is pretty high. Therefore, the results should be interpreted with caution. Another limitation was that the participants had to be contacted via social media and not approached in person. As a result, a lot of the participants that answered the first questionnaire did not respond to the message on their Facebook account, either they did not notice or ignored it. Also due to this being a longitudinal study, there were a few participants who only answered the questionnaire the first time and not the second time for reasons unknown to the researchers. In this study, the groups were defined by how often they are in the starting line-up in their league club in the Icelandic soccer division. This may be a flaw since being in the starting lineup is not the best way to illustrate the skill level of a soccer player. For instance, a player can be in the starting line-up only because another player who is normally a regular starter is injured or suspended from playing soccer. Also, there is a possibility that the players are competing for a club that is not in the top division or playing for a club in the relegation zone in the top division. While others are playing for the top teams in Iceland.

The present study also had a few strengths. It is one of the few longitudinal studies done

in sport psychology. Another strength is that this study has a homogeneous sample. All of the participants are of the same age and gender and play for the Icelandic national youth soccer team. Another strength is that when this study started in 2018 the players were just starting their career on an elite level. This is a good opportunity to see how their career develops and see if and how psychological factors could have an impact on their careers.

Future studies on similar matters can try to expand on these findings and examine in-depth the longitudinal effect that psychological skills can have on performance anxiety, mental toughness, and performance levels. Future studies could also try using a larger and more diverse sample. They could also try to transfer the study over to other sports to see if the results are similar or different between sports. Additionally, it could be interesting to see if the results vary when comparing players in a higher division to players in a lower division.

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Appendix A – Starting line-up

Ertu í byrjunarlið þíns félagsliðs?

- Alltaf
- Mjög oft
- Frekar oft
- Hvorki oft né sjaldan
- Frekar sjaldan
- Mjög sjaldan
- Aldrei

Appendix B – TOPS scale

Test of Performance Strategies

Hvert eftirfarandi atriði lýsa sérstökum aðstæðum sem þú gætir hafa upplifað við æfingar eða keppni. Lestu hverja fullyrðingu og merktu við til að gefa til kynna hvernig hún á almennt við þig.

	Aldrei	Sjaldan	Stundum	Oft	Alltaf
Ég set raunhæf en krefjandi markmið fyrir æfingu	<input type="radio"/>				
Ég segi hluti við sjálfa/n mig til að bæta frammistöðu mína á æfingum	<input type="radio"/>				
Á æfingu sé ég fyrir mér í huganum góða fyrri frammistöðu	<input type="radio"/>				
Athygli mín reikar auðveldlega á meðan ég æfi	<input type="radio"/>				
Ég þjálfá mig í að nota slökunaraðferðir við þjálfun	<input type="radio"/>				
Ég æfi aðferðir til að slaka á	<input type="radio"/>				
Ég get slakað á ef ég verð of stressuð/aður í keppni	<input type="radio"/>				
Ég sé fyrir mér í huganum að keppnin fari nákvæmlega eins og ég vil að hún fari	<input type="radio"/>				
Ég get stjórnað trúfandi hugsunum þegar ég æfi	<input type="radio"/>				
Ég verð þirruð/aður og kemst í tilfinningalegt uppnám þegar ekki gengur vel á æfingu	<input type="radio"/>				
Ég er með sérstök lykilorð eða frasa sem ég segi við sjálfa/n mig til að bæta frammistöðu mína í keppni	<input type="radio"/>				
Ég legg mat á það hvort ég nái MÍNUM keppnismarkmiðum	<input type="radio"/>				
Á æfingum virðast eðlilegt flæði í hreyfingum mínum og færni	<input type="radio"/>				
Þegar ég geri mistök í keppni finnst mér erfitt að ná að einbeita mér aftur	<input type="radio"/>				
Þegar ég þarf þess, þá get ég slakað á við keppnisáðstæður til þess að standa mig	<input type="radio"/>				
Ég set mjög sértæk markmið fyrir keppni	<input type="radio"/>				
Ég ímynda mér að ég klúðri einhverju í keppni	<input type="radio"/>				
Ég tala við sjálfa/n mig á jákvæðan hátt til að fá sem mest út úr keppnum	<input type="radio"/>				
Ég set ekki markmið fyrir æfingar, ég mæti bara og geri	<input type="radio"/>				
Ég æfi frammistöðu mína í huganum og við keppnisáðstæður	<input type="radio"/>				
Ég á erfitt með að stjórna tilfinningum mínum þegar það gengur ekki vel á æfingu	<input type="radio"/>				
Þegar mér gengur illa á æfingu missi ég einbeitingu	<input type="radio"/>				
Tilfinningar mína koma í veg fyrir að ég sýni mitt besta í keppni	<input type="radio"/>				
Ég missi stjórn á tilfinningum mínum þegar ég er undir keppnispressu	<input type="radio"/>				
Á æfingu, þegar ég sé fyrir mér frammistöðu mína ímynda ég mér eins og ég sé að horfa á sjálfan mig á myndbandi	<input type="radio"/>				
Ég roa mig niður á æfingu til að verða tilbúin/n	<input type="radio"/>				
Ég „peppa“ mig upp við keppnisáðstæður til þess að standa mig	<input type="radio"/>				
Á æfingu þá get ég framkvæmt samsetta tækniæfingu eða hreyfingu án þess að einbeita mér að einstökum þáttum æfingarinnar eða hreyfingarinnar - Framkvæmdin gerist eðlilega	<input type="radio"/>				
Í keppni þá framkvæmi ég á „sjálfstýringu“	<input type="radio"/>				
Þegar eitthvað kemur mér í uppnám á meðan keppni stendur, hefur það neikvæð áhrif á frammistöðu mína	<input type="radio"/>				
Ég held hugsunum mínum jákvæðum á meðan keppni stendur	<input type="radio"/>				
Ég segi hluti við sjálfa/n mig til að bæta frammistöðu mína í keppni	<input type="radio"/>				
Við keppnisáðstæður æfi ég líðan mína í keppni í huganum	<input type="radio"/>				
Ég æfi það hvernig ég get „gírað“ mig upp	<input type="radio"/>				

Ég stýri því hvernig ég tala við sjálfan mig á skilvirkan hátt á meðan keppni stendur	<input type="radio"/>				
Ég set markmið sem hjálpa mér að nýta æfingátíma á skilvirkan hátt	<input type="radio"/>				
Ég á erfitt með að gíra mig upp ef það er deyfð yfir mér á æfingum	<input type="radio"/>				
Þegar það gengur illa hjá mér á æfingum næg ég að hafa stjórn á tilfinningum mínum	<input type="radio"/>				
Ég geri það sem þarf til að „peppa“ mig upp fyrir keppni	<input type="radio"/>				
Á meðan keppni stendur hugsa ég ekki mikið um eigin frammistöðu – ég bara læt þetta gerast	<input type="radio"/>				
Á æfingu, þegar ég sé fyrir mér frammistöðu mína, ímynda ég mér hvernig mér muni líða	<input type="radio"/>				
Ég á erfitt með að slaka á þegar ég er of spennur/ur í keppnisaðstæðum	<input type="radio"/>				
Ég á erfitt með að „peppa“ mig upp á meðan á æfingu stendur	<input type="radio"/>				
Á æfingum næg ég að stjórna hvert ég beini athygli minni á skilvirkan hátt	<input type="radio"/>				
Ég set persónuleg frammistöðumarkmið fyrir keppni	<input type="radio"/>				
Ég hvet sjálfa/n mig til að æfa með því að tala jákvætt við sjálfan mig	<input type="radio"/>				
Á æfingum virðist ég vera í flæði	<input type="radio"/>				
Ég æfi það að gíra mig upp á æfingum	<input type="radio"/>				
Ég á erfitt með að halda einbeitingu á löngum æfingum	<input type="radio"/>				
Ég tala við sjálfa/n mig á jákvæðan hátt til að fá sem mest út úr æfingunni	<input type="radio"/>				
Ég get „gírað“ mig hæfilega upp fyrir keppni	<input type="radio"/>				
Ég er með mjög sértæk markmið fyrir æfingar	<input type="radio"/>				
Í keppni þarf ég ekki að hugsa meðvitað um það sem ég geri, það er mér eðlislægt	<input type="radio"/>				
Ég ímynda mér keppnisrútnuna mína áður en til keppni kemur	<input type="radio"/>				
Í keppni set ég mér sértæk markmið um úrslit eða niðurstöðu	<input type="radio"/>				
Ég kann að slaka á þegar mikil pressa er í keppni	<input type="radio"/>				
Ég tala við mig á neikvæðan hátt í keppni	<input type="radio"/>				
Á meðan æfingu stendur hugsa ég lítið um frammistöðuna, ég bara læt þetta gerast	<input type="radio"/>				
Frammistæða mín í keppni er án þess að ég hugsi meðvitað um hana	<input type="radio"/>				
Ég æfi frammistöðu mína í huganum fyrir æfingar	<input type="radio"/>				
Ég get „gírað“ mig upp keppni þegar ég þarf þess	<input type="radio"/>				
Á meðan keppni stendur hugsa ég um mistök	<input type="radio"/>				
Ég nýti æfingátíma til að vinna með slökunaraðferðina mína	<input type="radio"/>				
Ég stjórna því hvernig ég tala við mig á æfingum á áhrifaríkan hátt	<input type="radio"/>				

Appendix C – SAS-2

Margt íþróttafólk verður taugaóstyrkt á undan eða á meðan keppni stendur. Þetta á jafnvel við um atvinnumenn. Vinsamlegast lestu hverja spurningu vel. Merktu svo við þann svarmöguleika sem lýsir því hvernig þér líður YFIRLEITT fyrir eða á meðan þú ert að keppa. Það eru engin rétt eða röng svör. Svaraðu eins heiðarlega og þú getur og ekki dvelja of lengi við hverja spurningu.

Áður en eða á meðan ég keppi...

	Alls ekki	Aðeins	Frekar mikið	Mjög mikið
er erfitt að einbeita sér að leiknum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
er líkami minn uppspenntur	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
hef ég áhyggjur af því að ég muni ekki spila vel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
er erfitt fyrir mig að einblína á það sem ég á að gera	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
hef ég áhyggjur af því að bregðast öðrum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
finn ég fyrir spennu í maganum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
missi ég einbeitingu á leikinn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
hef ég áhyggjur af því að eiga ekki minn besta leik	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
hef ég áhyggjur af því að ég muni spila illa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
finnst mér vöðvarnir vera óstyrkir	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
hef ég áhyggjur af því að ég muni klúðra leiknum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
finn ég fyrir ólgu í maganum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
get ég ekki hugsað skýrt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
finnst mér vöðvarnir stífir því ég er taugaspennt/ur	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
á ég erfitt með að einbeita mér að því sem þjálfarinn segir mér að gera	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix D – SMTQ

Spurningalisti um hugræna þætti í íþróttum.

Spurningalistinn inniheldur 14 staðhæfingar sem tengjast hugrænum þáttum í íþróttum. Vinsamlegast lestu hverja staðhæfingu fyrir sig og leggðu mat á það hversu vel hver þeirra á við þig. Merktu svo við það sem á best við svar þitt.

Hversu vel eiga þessar staðhæfingar við þig?

	Á alls <u>ekki</u> við mig	Á nokkuð við mig	Á vel við mig	Á <u>mjög</u> vel við mig
Ég get náð aftur yfirvegum þótt ég hafi tímabundið misst hana.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ég hef áhyggjur af því að standa mig illa.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ég er staðráðin(n) í að ljúka þeim verkefnum sem ég er með.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ég finn fyrir miklu óryggi með sjálfa(n) mig.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ég hef mikla trú á getu minni.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ég hef það sem þarf til að standa mig vel undir pressu.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ég finn fyrir reiði og þirringi þegar hlutirnir fara ekki mér í hag.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ég gefst upp í erfiðum aðstæðum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ég finn fyrir kvíða við aðstæður sem ég bjóst ekki við eða aðstæður sem ég get ekki stjórnað.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ég truflast auðveldlega og missi einbeitinguna.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ég hef kosti sem aðgreina mig frá keppinautum mínum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ég tek ábyrgð á því að setja mér krefjandi áskoranir og markmið.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ég lít á mögulegar ógnir sem jákvæð tækifæri.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Undir pressu er ég fær um að taka ákvarðanir og finna fyrir sjálfsöryggi á sama tíma.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix E – Informed Consent

Kæri íþróttaiðkandi.

Markmið þessarar rannsóknar er að meta íþróttasálfræðieiginleika íþróttafólks á Íslandi. Þessi könnun er framhald könnunar sem þú tókst þátt í árið 2017 eða 2018.

Rannsakendur eru Dr. Hafrún Kristjánsdóttir, sálfræðingur, dósent og deildarforseti íþróttfræðideildar Háskólans í Reykjavík, (sími 8941 713, netfang: hafrunkr@ru.is), Hallur Hallsson, kennari í íþróttasálfræði við HÍ og HR (sími 847 2300, hallur@hi.is) og Guðmundur Karl Jónsson og Ari Alexander Fernandes sálfræðinemar við HÍ.

Við viljum vinsamlegast biðja þig að svara könnuninni. Svörunin tekur u.þ.b. 15 mínútur. Farið verður með öll gögn sem trúnaðarmál. Óskað er eftir nafni þátttakenda en þegar svörun er lokið er nafn tekið í burtu og þáttakendanúmer sett í stað nafns áður en gögn eru skoðuð. Rannsakendur telja enga áhættu fylgja þátttöku. Þátttakendur geta neitað að svara einstökum spurningum og hætt þátttöku hvenær sem er án útskýringa eða eftirmála. Á meðan á rannsókninni stendur verða ópersónugreinanleg gögnin varðveitt í læstri möppu á tölvu rannsakenda sem einungis rannsakendur hafa aðgang að. Þegar henni er lokið verður gögnunum eytt. Fyrirhugað er að skrifa vísindagrein upp úr niðurstöðunum.

Með því að halda áfram staðfestir þú samþykki þitt fyrir þátttöku.

- Ég staðfesti að ég er 18 ára eða eldri
- Ég er yngri en 18 ára