

**ACCEPTANCE AND VALUE –BASED PSYCHOLOGICAL COACHING
INTERVENTION FOR ELITE FEMALE FLOORBALL PLAYERS**

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KETTUNEN, ANNIKA & VÄLIMÄKI, VILHELMIINA: Hyväksyntä-, tietoisuustaito- ja arvopohjaisiin menetelmiin perustuva psyykkinen valmennus nais-, ammattilais-salibandypelaajilla.

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Urheilijoiden psyykkinen valmennus on viime vuosina koostunut pääasiassa erilaisten psyykkisten taitojen opettamisesta, vaikka niiden hyödyistä ei ole saatu kovinkaan suurta näyttöä. Tämän tutkimuksen tavoitteena oli selvittää miten 6-viikkoinen Hyväksymis- ja omistautumisterapiaan (Hayes, Strosahl & Wilson 1999) pohjautuva psyykkisen valmennuksen interventio toimii joukkueurheilussa, tarkemmin sanottuna naissalibandyssä. Tutkimuksessa oli mukana kaksi naisten salibandyliigassa pelaavaa joukkuetta, joista toiselle toteutettiin interventio (n=24), ja toinen joukkue täytti pelkästään psykologiset mittarit toimien kontrolliryhmänä (n=23). Analyysimenetelmänä toimi toistomittausten varianssianalyysi, ja tulosten mukaan interventiolla oli myönteinen vaikutus urheilijoiden itseluottamukseen ja koettuun stressiin erityisesti stressaantuneilla urheilijoilla. Kerätyn palautteen perusteella urheilijat kokivat saaneensa uusia tapoja käsitellä stressiä ja ahdistusta ja interventio lisäsi heidän ymmärrystään suoritukseen liittyvistä tekijöistä. Tämä tutkimuksen perusteella voidaan todeta hyväksymis- ja omistautumisterapiaan pohjautuvan psyykkisen valmennuksen olevan todennäköisesti hyödyllistä urheilijoille.

Avainsanat: HOT, psyykkinen valmennus, salibandy

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The field of psychological coaching has been dominated by psychological skills training over the past decades even if it lacks coherent empirical evidence. This study examined the efficacy of a 6-week ACT-based psychological coaching programme, which was implemented as a group intervention for elite female floorball players. The intervention was provided for one team of floorball players ($n = 24$) and their progress was then compared to a control team ($n = 23$), which was not provided with any intervention. The intervention was based on acceptance and commitment therapy, which is created by Hayes, Strosahl and Wilson (1999). Based on analysis of variance, the results indicated that ACT-based intervention had a positive effect on athlete' self-confidence in experienced stress among those reporting high level of stress. Based on feedback from the athletes, the intervention taught the players new ways to cope with stress and anxiety, and gave them new understanding of the aspects that affect their training and performance. This research provides some support for the feasibility of acceptance and value-based methods for psychological coaching for female floorball players.

Keywords: ACT, psychological coaching, floorball

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INTRODUCTION

Psychology of sports

The history of applied psychology of sports is quite short and the most frequently used theories have been Bandura's social cognitive theory (Bandura, 1977) and other cognitive behavioural theories, such as Meichenbaum's development of cognitive behavioural modification (Meichenbaum, 1977). Traditionally psychology of sports has been seen as a combination of teaching the skills that promote the performance, and treating the psychological problems related to sport performances.

Another typical feature of the psychology of sports has been to define psychological traits that are good for athletes. Jones (2002) defines dimensions and traits that are related to mentally tough elite performers. He claims "mental toughness" to be an important term in psychology of sports but at the same time misconceived (Jones, 2002). According to his qualitative research mental toughness is defined as having mental edge that helps one to stay more determined, focused and confident under stress compared to opponents (Jones, 2002). Other used terms in the field of psychology of sports are ideal performance state (L. Hardy, Jones, & Gould, 1996) and flow state (Csikszentmihalyi, 1975). These terms interface in many ways as they both can be described as a state where physiological, cognitive and affective conditions are in an ideal balance when they allow learned skills to appear in an automatic mode that will more likely lead to successful performance (Gardner & Moore, 2007).

Psychological coaching can be seen as a part of psychology of sports. The psychological coaching can be divided into three sections: promoting of psychological well-being and development of personality by supporting coaching, teaching psychological skills, and treating the possible problems athletes encounter. Traditionally psychological skills taught have been goal-setting, interaction, imagery, focusing and mental rehearsal, relaxation, and stress management (Matikka & Roos-Salmi, 2012), which have been mainly what psychological coaching has been about in recent years.

Psychological Skills Training

Developing self-control over internal states by using psychological skills such as relaxation, imagery and mental rehearsal, self-talk and goal-setting has been one of the major methods of psychological coaching in recent decades. This is called psychological skills training; PST (J. Hardy, Hall, & Hardy, 2005). Fundamental background of PST is based on an assumption, that optimal athletic performance is related to "ideal performance state", which will most likely occur when the negative emotions and

thoughts are controlled or reduced. The control of negative thoughts and emotions is seen as a key to reach elite performance, and the control of internal states has been the main focus of the research in the field of psychology of sports during last decades. Despite the fundamental assumption of the importance of self-control there is only a little evidence that negative thoughts or emotions would impair the performance. Actually there are several models and theories that suggest the opposite.

Cusp Catastrophe Model, Processing Efficiency Theory, and The Individual Zones of Optimal Functioning (IZOF) model all suggest that it is possible to reach the ideal performance state while experiencing negative thoughts or emotions (Neil, Mellalieu, & Hanton, 2006). According to Cusp Catastrophe Model, up to certain point high levels of anxiety and physiological arousal can lead to successful performance, and only when the level of anxiety is too high there might be catastrophic declines in performance. Cohen, Pargman and Tenenbaun (2003) pointed out that even the high levels of anxiety do not catastrophically affect the performance, and therefore the fundamental assumption of the need to control the anxiety, could be seen as defective. Moore and Gardner (2011) also support this thought in their article about emotion regulation model. They present that experiential and/or expressive suppression of emotion can result in maladaptive outcomes such as impaired decision-making and maintenance of psychopathology (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Taken together, these results suggest that controlling thoughts and emotions may have even a negative effect on performance, which is opposite to PST.

Other studies also questioned PST model and its effectiveness. Craft and colleagues (2003) carried out a meta-analytic review of the relation between athletic performance, self-confidence, and competitive anxiety. They found out that self-competitive anxiety and athletic performance are poorly related. This would suggest that anxiety does not affect the performance, and therefore it does not need to be controlled. In a systematic review carried by Tod, Hardy and Oliver (2011) the effects of self-talk, which is a method of PST, were examined. The results of their study suggest that negative self-talk does not have a negative effect on performance and that there is no significant performance difference between positive and negative self-talk (Tod et al., 2011).

According to Gardner and Moore (2006) none of the procedures of PST shows enough empirical support when taking into account how widely it is actually utilised around the world. Some multicomponent interventions where PST techniques have been combined, have shown slightly better empirical support, but still the results are incompatible. In the meta-analysis of PST research Gardner and Moore (2006) analysed 104 empirical studies examining the efficacy of PST and found out that most studies do not meet the criteria for evidence-based empirical support. Altogether, there is a lack of relevant empirical support when it comes to the use of Psychological Skills Training and its efficacy.

New approaches in the field of psychology of sports

During the last decade, new approaches have risen in the fields of psychology of sports and elite performance. Since the idea of controlling negative thoughts and emotions seems to be faulty, the new wave has approached the topic from a different prospect; mindfulness and acceptance-based approach. Mindfulness provides a different perspective: the aim is not to suppress any of the emotions and thoughts but to accept them and to learn to live with and despite them (Gardner & Moore, 2004b).

From the point of view of mindfulness psychological coaching should aim to develop a mindful, non-judging state of mind where present-moment acceptance of one's internal processes is combined with a clarification of valued goals and enhanced attention to external cues (Gardner & Moore, 2004b). There are several different kinds of mechanisms through which mindfulness interventions can be beneficial to psychological health (Keng, Smoski & Robins, 2011). Mindfulness training has been shown to result into increases in mindful awareness, decentring, acceptance, attentional control, memory, values clarification and behavioural self-regulation, which may all work as mediators in interventions. Gardner and Moore (2004b) also suggest that mindfulness training may lead to a greater self-awareness, which may help to identify habitual ways reacting to external cues, resulting in enhanced behavioural flexibility in athletic performance.

Another interest in the field of psychological coaching has been attention and its focus. Gardner and Moore (2007) presented that to achieve ideal performance state, attention must be task-focused instead of self-focused. With self-focused attention they mean attention towards internal stimuli like thoughts and emotions, whereas task-focused attention falls upon external stimuli, options and contingencies. Gardner and Moore (2004b) claim that when the attention is self-focused, it might be possible that the negative thoughts and emotions can increase or last longer. This is because when the focus is on controlling the internal states the athlete is preoccupied with reducing the undesirable thoughts and emotions he/she is experiencing and therefore the behaviour is disturbed. Thus when the focus is on a task on demand, the athlete can appropriately respond to the cues relevant to performance and maintain optimal focus. (Gardner & Moore, 2004a)

Klinger, Barta and Glas (1981) found out that when attentional focus shifted from external cues to a more self-judging manner it resulted in lowered athletic performance level. Another study also showed that self-evaluation during performance may cause weakened athletic performance (Edwards, Kingston, Hardy, & Gould, 2002). It is also worth noting that recent studies show that aiming towards self-control in athletic performance may lead to overly cognitive rather than meta-cognitive activity, which might result in reduced capacity to utilize previously developed athletic skills, reacting to external cues and maintaining focus in the athletic task (Gardner & Moore, 2004b).

Gardner and Moore (2004b) propose that optimal self-regulation requires meta-cognitive attention to external cues and options, but at the same time minimal self-judgement, minimal vigilance to external or internal threat and minimal worry. Crocker, Alderman and Smith (1988) found out that Cognitive-Affective Stress Management Training (SMT) used on elite volleyball players developed the players' capacity to focus on performance, attend in the moment, and cope with the experienced emotions. In this study the competitive performance enhanced significantly even though there was minimal reduction in both competitive anxiety and negative cognitions.

Competitive anxiety itself does not weaken the performance but interpretation of it might change how it effects behaviour in sports. The relationship between competitive anxiety and self-evaluated performance is dependent on the athletes' self-confidence (Hanton, Mellalieu, & Hall, 2004). Hanton, Mellalieu and Hall (2004) studied how self-confidence is related to how athletes interpret symptoms of competitive anxiety. They found out that lack of self-confident is related to tendency to interpret competitive anxiety as uncontrollable and that again resulted in problems in focus and control. Woodman and Hardy (2003) conducted a meta-analysis about the impacts of competitive anxiety and self-confidence upon performance. The results of their study indicate that positive self-confidence impacts performance positively.

Acceptance and commitment therapy (ACT)

Acceptance and commitment therapy (ACT) is considered to be a part of the third wave of behaviour therapies (Hayes, 2004). ACT holds on to both behavioural and cognitive traditions of behaviour therapies (Hayes, Masuda, Bissett, Luoma, & Guerrero, 2004). The factors that unite the third wave therapies include "contextual and experiential change strategies" (Hayes, 2004), acceptance, mindfulness, values and spirituality (Hayes, 2004). The methods used are usually experiential and not as didactic as the earlier waves' strategies (Hayes et al., 2004). The third wave gives more emphasis on factors such as present moment, mindfulness, acceptance, contextual factors and metacognitive factors as compared to earlier waves (Hayes, Follette, & Linehan, 2004). The use of homework is common in ACT as it is in other cognitive behavioural therapies.

Acceptance and commitment therapy – the basics

Acceptance and commitment therapy takes a rather different kind of perspective to both human language and cognition, human suffering, as well as to how to treat people with psychological problems when compared to traditional behaviour therapies. Language is a powerful tool for people but according to Hayes et al. (1999) it possesses too much power over our functioning. This dominance is the cause of human suffering (Hayes et al., 1999). It should also be noted that ACT

contains an idea of suffering being part of human living (Hayes et al., 1999), and therefore it cannot be totally removed from peoples' lives.

Suffering will not disappear from people's lives no matter how hard we try. From ACT's perspective the main cause of suffering is usually psychological inflexibility (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). There are six dimensions to psychological inflexibility; experiential avoidance; cognitive fusion; attachment to conceptualized self; inaction/impulsivity; lack of values clarity; and dominance of the conceptualized past and feared future (Hayes et al., 2006). ACT's goal is to promote psychological flexibility by using six core processes that are each linked to a dimension of psychological inflexibility. The core processes are acceptance; cognitive defusion; contact with the present moment; self as context; values; and committed action.

First core process, acceptance is considered to be the opposed to experiential avoidance. It involves an idea of being open to one's own feelings and thoughts without trying to change their frequency or form. In ACT the goal is not to change or eliminate thoughts or feelings but rather change their functions. From ACT's perspective one's thoughts or emotions are not wrong but their function can cause psychological problems (Hayes et al., 2006). Experiential avoidance is a process of avoiding or ignoring one's inner events: feelings, thoughts, and bodily sensations, or avoiding situation where unpleasant private events tend to occur (Hayes et al., 1996).

Hayes, Wilson, Gifford, Follette & Strosahl (1996) suggest that experiential avoidance is an essential part of human behaviour. Despite the close relationship with language, experiential avoidance is also emotional and behavioural as well as cognitive (Boesch, Koss, Figueredo, & Coan, 2001), and therefore often behind psychopathology (Hayes et al., 1996). In sports experiential avoidance might be seen for example as a lack of risk-taking due to the fear of failing, thus acceptance would be taking the risk despite the fear.

Second core process, cognitive defusion is a set of techniques that try to change the undesired functions of thoughts. These techniques attempt to lessen the power of language on people's functioning. (Hayes et al., 2006) Cognitive defusion can be seen as opposite to cognitive fusion. Cognitive fusion is when we by relational learning combine words with functions sometimes rather randomly (Hayes et al., 1999). The ties we bind between words and function are essential to language and cognition but from ACT's perspective they usually are the source of human suffering as well. These ties are loosened in ACT by cognitive defusion techniques, or what was earlier called "deliteralization" (Hayes et al., 1999).

Contact with the present moment is the third core process and a typical feature of third wave behavioural therapies. It is also linked to mindfulness. Being in contact with the present moment means being in touch with one's inner experiences as well as the immediate surroundings. (Hayes et

al., 2006) Mindfulness has been shown to be related to increased subjective well-being, reduced psychological symptoms, emotional reactivity and increased behavioural self-regulation (Keng, Smoski & Robins, 2011). According to this Keng, Smoski and Robins (2011), there is also a growing body of evidence showing that mindfulness is positively correlated with psychological well-being, for example a higher level of life-satisfaction, agreeableness, conscientiousness, vitality, self-esteem, empathy, sense of autonomy, competence, optimism and positive affect.

Mindfulness is also related to the fourth core process; self as context. Mindfulness exercises are used to develop one's awareness of thoughts and feelings without clinging to them, which in other words is self as context (Hayes et al., 2006). Mindfulness views internal experiences as naturally occurring human events without estimating whether they are good or bad. According to Holas and Jankowski (2013), mindfulness can be viewed as a meta-cognitive skill. Being able to understand the concept of self as context can be viewed as a meta-cognitive skill.

The fifth core process is values. Values are very essential in ACT. The other five core processes aim at helping people to live their lives according to their values. (Hayes et al., 2006) ACT's purpose is not to provide people with values or to help them create them but its goal is to help people to come in touch with their values again (Hayes et al., 1999). In sports context this could simply mean athletes becoming aware of why they do the sport.

The final core process, committed action ties all core processes together. Just as in other behavioural therapies also in ACT clients are expected to not only come to therapy but also to do homework that completes the work done in therapy sessions and brings it to their everyday life context. (Hayes et al., 2006) Kazantzis, Deane and Ronan (2000) conducted a meta-analysis of the effects of homework on therapy outcomes in cognitive behavioural therapies. They found out that the use of homework has a positive effect on therapy outcomes.

Areas where ACT has been applied

ACT has been used to treat people with various psychological and physical problems. Powers, Vörding and Emmelkamp (2009) conducted a meta-analytical study of ACT's effectiveness. They found out that ACT was more effective than control conditions (eg. waiting list) in all the studies in the analysis that had a control condition. However, they did not find ACT to be more effective than other established interventions. Their review included studies where ACT had been used to treat people with psychosis, worksite stress, pain disability, anxiety and depression, polysubstance abuse, math anxiety, and drug refractory epilepsy. (Powers et al., 2009)

Bond and Bunce (2003) studied how ACT's one core process acceptance is related to mental health and job performance among customer service workers. They found out that better acceptance

predicts better mental health and job performance in one year's time. They also claimed that the higher acceptance the more resources one has to observe thoughts and feelings and on the other hand environment. In their study this meant that workers with higher acceptance could focus better on their job. In sports this could appear as a better ability to read the game. Gregg, Callaghan, Hayes and Glenn-Lawson (2007) studied whether ACT education combined with diabetes education could help people coping with diabetes. They found out that even a short acceptance and mindfulness training resulted in better self-management and better diabetic control after three-month follow-up as compared to only diabetes education.

ACT has also been used in other non-clinical purposes such as helping people to quit smoking (Gifford et al., 2004), reducing obesity-related stigma (Lillis, Hayes, Bunting, & Masuda, 2009), to improve pain tolerance (Hayes et al., 1999), diabetes self-management, and weight control (Powers et al., 2009) supporting parents with autistic children (Blackledge & Hayes, 2006) and, improving the quality of life for people with drug refractory epilepsy (Lundgren, Dahl, Melin, & Kies, 2006).

Taken together, these findings suggest that ACT can be used not only for clinical populations but also for non-clinical groups. This evidence also suggests that acceptance is the key to fully exploit one's resources as compared to controlling. Therefore, we propose that ACT is suitable in psychological coaching for athletes.

Acceptance – commitment model of sport enhancement

Gardner and Moore (2004b) present The Mindfulness-Acceptance-Commitment-based (MAC) approach, which is an integration of Acceptance and Commitment therapy and Mindfulness-Based Cognitive therapy developed for athletes. It emphasizes non-judging, mindful awareness and acceptance of in-the-moment inner experiences instead of controlling and reducing internal experiences. This approach to psychological coaching takes account of the PST studies that suggest that controlling of inner experiences might worsen performance. The MAC approach believes that it is possible to improve performance while experiencing negative internal states. All internal states are seen as normal part of human existence and sports. Athletes are mindful in the present-moment and fully experiencing the internal thoughts and emotions by accepting them as a part of life. Athletes are willing to engage in behaviours that reflect commitment to valued goal despite of uncomfortable or unwanted thoughts and emotions. In MAC psychopathologies are thought to derive from experiential avoidance. (Gardner & Moore, 2004a).

Experiential avoidance is a phenomenon in which an individual is trying to avoid being in contact with a certain feeling or thought and attempts to alter the form or frequency of them, and the context where they occur (Hayes & Wilson, 2003). This may lead in to detrimental behaviour in

athletic performance, for example a fear of failing might prevent one from performing to the full. The aim in MAC is for the athlete to be able to accept the internal experiences while at the same time maintaining the capability to focus on external cues. In addition to athletic performance, MAC also targets in enhancing problem-solving, decision-making and behavioural processes that are needed in every-day life outside the sports (Gardner & Moore, 2004b).

There have been a number of studies that have shown the efficacy of the MAC training for improving the athletic performance. Case studies of elite athletes by Gardner and Moore (2004a; 2007) reveal that both process measures of attention and awareness and outcome measures of performance were enhanced. There are some studies that compare MAC and the traditional PST training. The result show that participants receiving MAC coaching had bigger increase in attention and flow, and also coaches evaluated their performance higher than the ones in the control group receiving PST coaching (Gardner & Moore, 2007). Another study found similar results. It investigated elite canoeists getting ACT based intervention or hypnosis intervention. The ACT intervention resulted in better performance in canoeing training than the hypnosis intervention (Villa, Montes, Cueto, Cepeda, & García, 2004).

In her doctoral thesis Sarah Hasker (2010) studied the effectiveness of MAC program compared to PST program. Both of the programs took seven weeks and the voluntary participants were University athletes. The results suggested that MAC approach can be useful when trying to enhance the performance. They also presented that the skill of being mindful and accepting towards internal states helps athletes attain higher performance level more promptly (Hasker, 2010).

Acceptance and value-based psychological coaching has mainly been used with individual athletes. In Hasker's study (2010) some of the athletes were athletes from different team sports, and Gardner and Moore (2007) applied this approach to lacrosse team. These were the only two studies that we found concerning acceptance and value-based psychological coaching and team sports. We found no research on acceptance and value-based psychological coaching from Finland. Thus, we find it important to do research on acceptance and value-based psychological coaching and team sports in Finland.

Hypothesis

Based on previous research on MAC approach to psychological coaching it can be assumed that acceptance and commitment therapy based methods are usable for psychological coaching for athletes. Therefore we hypothesized that our ACT-based intervention of psychological coaching is an efficient tool for competitive athletes. Further we hypothesized:

ACT-based intervention increases athletes' general well-being and enhances performance in sports as compared to a control group not receiving any intervention. We were also interested in the experiences of the athletes after they had received and applied an ACT-based intervention.

METHODS

Participants

Participants were women floorball players from two teams playing in the national league of Finland. The teams were recruited by contacting their head coaches. The research design consisted of comparing an intervention team with a control team. Even though the sample was not randomized it can be presumed that these two teams represent quite well the average team in Finnish women floorball league where the total number of teams is twelve. Both teams have been average in rankings for a few years. Athletes in the intervention team were asked to volunteer to participate in a six-week psychological coaching programme while the control team did not get any intervention. The role of the control team in this design was to serve as the control group for the possible intervention effect. The number of participants in the intervention team was 25, age ranging from 17 to 38 years the average being 23.8 (sd=5.4) years. In the intervention team, the average number of years the players had played floorball was 9.4 (sd=4.0) and the average number of terms played in the team was 2.9 (sd=3.1). The number of participants in the control team was 24, and the players' age ranged from 15 to 32 years the average being 19.7 (sd=4.8) years. The average number of years played was 9.6 (sd=3.1) and the average number of terms in the team was 1.7 (sd=1.7).

Most of the athletes (19 out of 25) from the intervention group reported their motivation towards the intervention to be 4 (rather motivated) or 5 (highly motivated) on a Likert scale from 1 (no motivation) to 5 (highly motivated). One of the players reported the level as 2 (not so motivated), and four players reported 3 (neutral / do not know).

Procedure

The intervention was based on acceptance and commitment therapy. It included basic elements from acceptance and commitment therapy, but it was modified to be more linked to context of sports. The manual was created, based on those two methods, by Raimo Lappalainen and Vilhelmiina Välimäki. The intervention manual was tested with two athletes from the intervention team during four meetings

two months before the actual intervention. The manual was refined and improved based on the feedback received from the pilot intervention.

After contacting the head coach of the intervention team, the purpose of the research and practicalities were discussed with the team coaches and the researchers. The coaches agreed their team would participate in the research programme. Before the intervention started, the participants were given a short lecture (20 min) about the programme and they were asked to fill out the pre-measurement forms that also included an informed consent. The participants were guided to fill out the forms carefully and independently. In case they needed help they were guided to consult the research group members who were present during the meeting. The participants were then assigned to one of the four intervention groups. All the groups included from 5 to 7 participants.

After the pre-measurements the intervention groups received an identical 6-week intervention of psychological coaching. The main intervention included six meetings, each of which took about one hour. The leaders of the groups were two psychology master's degree students from the University of Jyväskylä. Both of the leaders were familiar with the basics of ACT and MAC before the programme and they had also received a short orientation to group interventions from their supervisor who was a professor of psychology from the University of Jyväskylä. The leaders were familiar with the intervention manual, and they had practised using it with the test group before the actual intervention meetings. During the programme the leaders received supervision of the work once a week, and the manual was also refined within the intervention based on the experiences of the leaders and feedback and comments from the participants.

The control team was given a short description of the study and asked to volunteer to participate in the study. The participants were guided to fill out the forms carefully and independently. In case they needed help they were guided to consult the research group members who were present during the meeting. The participants then filled out pre-measurement forms as well as informed consent. The control team was not provided with any intervention, but they were promised to get detailed feedback and the results of the research.

After going through the psychological coaching programme the intervention team, as well as the control team, filled out post-measurement forms (8 weeks). After a period of 11 weeks from the post-measurements, both teams filled out the follow-up measurement forms. Detailed protocol of the research is presented in Figure 1.

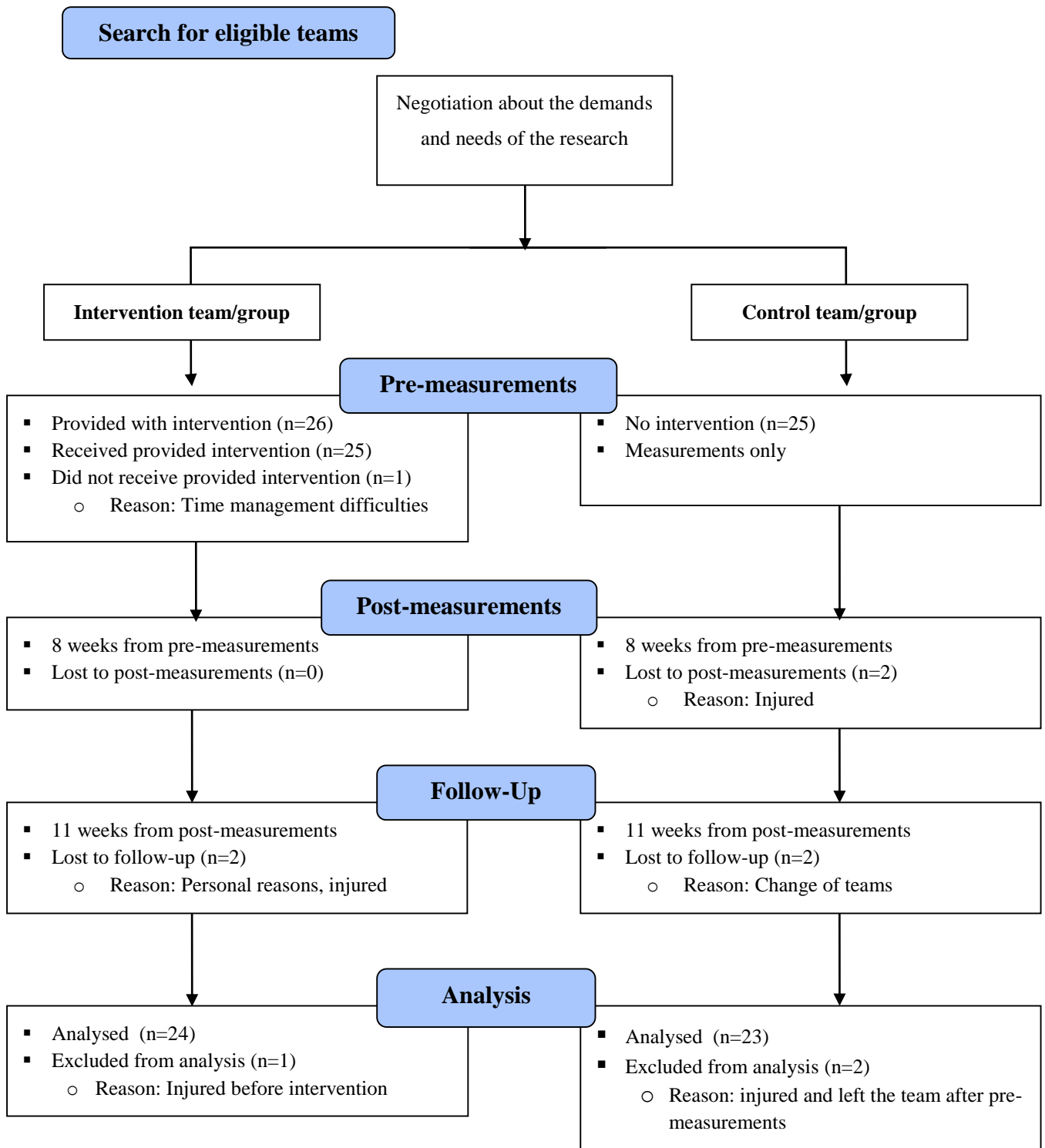


FIGURE 1. Flow chart of the study

Intervention

The athletes were assigned to four groups but they were allowed to change groups if the schedule of the other groups suited them better. They were advised to participate in the same leader's group if they decided to change a group. Both leaders had one group on Mondays and one group on Tuesdays. One session per week was filmed for research use.

Each session started with a short mindfulness exercise, but the content of the exercise varied from week to week depending on the topic of the day. After that the participants were asked to fill out a form where they estimated time used to their homework exercises during the previous week and write down risen questions and thoughts. Filling out the forms was followed by revision and discussion from last week's key issues. After discussion the leader presented the key issues of the current meeting by explaining and using examples and exercises as a support. Metaphors were used to help the participants combine the key issues with their own experience. Each session included two to five mindfulness exercises, which were linked to the ACT and sporting contexts. In the end of each session the issues of the day were discussed and participants wrote down some thoughts and feelings about the day's meeting. The key issues of each meeting are presented in the Table 1.

Between the sessions athletes were asked to complete homework assignments. These included similar mindfulness exercises that were practised during the sessions. The coaches were guided to remind the athletes of the exercises three times during floorball practises. The idea of reminding was that the exercises would become a part of training and every-day routines. Information about the amount of homework was collected at every session with a short question form where athletes estimated how many times they had performed the exercises between the sessions in trainings, games and outside their sport.

TABLE 1. Description of the 6 session ACT intervention

	Title	Description	Homework
1 st	<i>Introduction</i>	Going through the goals and basics of the method (ACT) and this programme.	<ul style="list-style-type: none"> • Self as an observer (observing breathing and bodily sensations)
2 nd	<i>Mindfulness skills</i>	Basics of mindfulness, cognitive defusion, self as an observer.	<ul style="list-style-type: none"> • Thanking one's mind for its thoughts • Self as an observer (observing breathing and bodily sensations)
3 rd	<i>Choices and value-guided action</i>	Value analysis, becoming aware of one's values and that life is full of choices and options	<ul style="list-style-type: none"> • Observing breathing, bodily sensations and thoughts • Applying different methods to find one's own way to be mindful
4 th	<i>Acceptance</i>	Basic principles of acceptance, combining acceptance with self as an observer, self as context.	<ul style="list-style-type: none"> • Welcoming of unpleasant thoughts and feelings • Observing breathing, bodily sensations and thoughts • Thanking one's mind for its thoughts
5 th	<i>Mindfulness skills and acceptance</i>	Revision of mindfulness and acceptance skills, bringing sports-related themes into exercises.	<ul style="list-style-type: none"> • Welcoming of unpleasant thoughts and feelings • Observing breathing, bodily sensations and thoughts • Thanking one's mind for its thoughts • Choosing to be present
6 th	<i>Commitment and application of the skills</i>	Choosing one's attitude, becoming aware of the consequences of one's attitude and choices.	<ul style="list-style-type: none"> • Welcoming of unpleasant thoughts and feelings • Cognitive defusion • Shifting awareness e.g. from bodily sensations to thoughts • Choose to be present and try to live one moment at a time

Measurements

Participants filled out seven questionnaires concerning their mental abilities and well-being. Four of the measures were concerned with overall well-being of the participants and three of them were sports-related. The eighth measure was coaches' evaluation of the athletes' performance. All of the questionnaires were filled out in the pre-, post- and follow-up measurements. In the pre-measurement the athletes were also asked to provide some basic information about themselves such as age, number of playing years and motivation toward the intervention. In the post-measurement the participants were asked to give feedback about the intervention by using a questionnaire. In the follow-up measurements the participants were asked about their view and thoughts concerning the intervention, and whether they were still using the skills learnt during the programme.

Psychological measures of overall well-being were selected according to previous use of these measures in the research on acceptance and commitment therapy. FFMQ and AAQ-II were selected because of their common use in measuring mindfulness skills and acceptance, which are basic elements of ACT. PSS and MHC-SF were selected because we were interested in whether the programme would have an effect on general well-being and stress of athletes. Self-confidence in sports was measured based on the findings in previous research, which indicated that self-confidence is related to performance (Hanton et al., 2004; Woodman & Hardy, 2003). GEQ was used because we were interested in the social aspects of sports. We decided to measure performance by athletes' self-evaluation and coaches evaluation in order to obtain an overall rating of the performance.

Psychological measures of overall well-being

FFMQ (Five Facet Mindfulness Questionnaire) is an instrument developed to measure the five factors of mindfulness. The factors representing mindfulness are observing, describing, acting with awareness, non-judging of inner experiences and non-reacting to inner experiences. The factors are measured by self-report of 39 items. Responses are coded corresponding to 5-point Likert scale 1 being never or rarely never true and 5 being very often or always true. The maximum possible score of FFMQ is 195 and the minimum is 39. (Baer et al., 2008)

AAQ-II, Acceptance and Action Questionnaire is a self-report measure evaluating the level of psychological flexibility and its opposite: the experiential avoidance. The 7-item version was chosen where the responses are changing from 1 (1=never true) to 7 (7=always true) on a Likert scale.

Responses are coded so that the higher score the bigger experiential avoidance and smaller psychological flexibility. Score can differ from 7 to 49. AAQ-II has great validity and reliability. (Bond et al., 2011)

PSS, Perceived Stress Scale is a measure assessing self-reported stress. Self-report measure has 10 questions and the score can differ from 0 to 40. The higher the score is the bigger is experienced stress. The questions are being answered according to experience of stress during past month and responses are coded on a Likert scale changing from 0 never to 4 very often. Some of the responses are coded backwards. (Golden-Kretz, Browne, Frierson, & Andersen, 2004)

MHC-SF, Mental Health Continuum Short Form is derived from the long form (MHC-LF), which is a measure of emotional, psychological and social well-being. MHC-SF consists of 14 items, which represent the most prototypical definition of each facet of well-being. Six of the items are representing psychological well-being, three items are presenting emotional well-being, and 5 of the items represent social well-being. Responses are coded on a 6-point Likert scale and the variance is from (0) not at all to (5) every day when evaluating one's feelings during past month. Overall scores can differ from 0 to 60, 60 being the best possible score instantiating very good mental health and well-being, and 0 the worst score. (Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011)

Sports-related measures

Self-confidence is a measure developed by Finnish professor of psychology Markku Ojanen. It is a self-reported measure of self-confidence in life in general, but in this case it was used as self-confidence in sports. An athlete reports the present level of self-confidence on a scale from 0 to 100, 100 being the highest level of self-confidence and 0 lowest. A definition of every tenth number (10, 20, 30...) was provided to assist in reporting. The level of self-confidence is evaluated based on the feelings and experience of confidence in everyday sport-related situations at the present moment. (Ojanen, 2001)

GEQ, Group Environment Questionnaire is a measure evaluating the group environment and cohesions on four dimensions. Two of the dimensions represent individuals: level of commitment and preference to the task of the group (individual task) and the experience of how the group is working together to accomplish a shared task (individual social). Two of the dimensions focus on the social meaning of the group: how one experiences its cohesion (group task) and does one feel his/herself accepted in the group (group social). Athlete reports his/her involvement to the team and

his/her conceptions of the team during the on-going season. The questionnaire consists of 18 arguments, which are answered on a 9-point Likert Scale, 1 being “totally disagree” and 9 being “totally agree”. Some of the answers are coded backwards. The scale can differ from 18 to 162 so that the higher the scores are the better is the experienced group environment and group cohesion. (Leeson & Fletcher, 2005)

Athletes Self-Rating Scale of Performance is a measure that assess athlete’s self-rated level of performance at the moment. The rating scale consists of 11 items each responded on a 5-point Likert-scale that ranges from (1) very poor to (5) very good. The rating scale is a direct measure of athletic performance and includes 11 variables of performance which are: overall athletic performance, risk-taking, concentration, team spirit, motivation, quickness, determination, endurance, mechanics, aggressiveness and co-operation skills. A definition of each variable was provided to assist in rating. The scale was designed based on Hasker’s similar performance rating scale (2010), which she used in her research of MAC approach for psychological coaching.

Coach’s Rating Scale of Athletes Performance is similar to Athletes Self-Rating Scale of performance. All coaches rated the performance of each athlete in their team by using the rating scale of performance.

Data Analysis

Data analysis was carried out with SPSS Statistics 20 programme. Missing data was replaced as follows: Missing values in post-measurements were replaced with an average of each participant’s pre-measurement and follow-up measurement values. There were five participants from the control team whose post-measurements were missing. None of the participants from intervention team lacked the post-measurements. Missing values from follow-up measurements were replaced with post-measurement values of each participant. There were two participants from the intervention team and two from control team whose follow-up measurements were missing. The normality of the data was studied from the histograms of the measurements. All measurements followed normal distribution and therefore, therefore; parametric analyses were used.

Repeated Measurements of Variance (MANOVA) was used to investigate whether the groups changed differently over time (pre, post, follow-up). Additional analyses were done investigating only the lower half of the participants by dividing the athletes into two groups using a median. For example, we compared whether the groups changed differently when including in the analyses those who reported more experienced stress and lower self-confidence in sports.

The differences in the starting levels of each measure between intervention and control teams were examined with the independent sample t-test. Age and psychological flexibility (AAQ) were different between the two teams (age: $t(45) = 2.73, p = 0.009$; AAQ: $t(45) = -2.45, p = 0.018$). Other measures (FFMQ, PSS, MHC-SF, Self-conf., GEQ, Perf. and Perf.Coach) were not statistically different between the teams.

The performance measurements (Athletes Self-Rating Scale of Performance and Coach's Rating Scale of Athletes Performance) were both responded on a 5-point Likert scale. The performance was studied as an average score of the eleven performance abilities. Cronbach's alpha was calculated for each evaluation of performance (athletes' and coaches' pre-, post-, and follow-up measurements) and they varied from 0.757 to 0.931, which indicates good reliability. The mean of coaches' ratings was used as a measure of the performance. The correlations between coaches' ratings were high in both teams ($r=0.46-0.93$). The correlations between coaches' evaluations of performance were calculated with Pearson correlation in all three measurements.

Effect sizes (ES) are reported using Hedge's g . They were calculated as follows. The *between-group* ES was calculated after the intervention and at follow-up by dividing the difference between the intervention group mean and the control group mean by the pooled standard deviation of the two conditions. The *within-group* ES was calculated for both the post- and follow-up measurements by dividing the mean change from pre-measurement by the combined (pooled) standard deviation (SD) and by dividing the mean change from the pre- to follow-up measurements with combined SD (Feske & Chambless, 1995; Morris & DeShon, 2002). Hedge's g was used because of the small sample size (Hedges, 1981; Hedges & Olkin, 1985). A *between-group* effect size of 0.2 was considered small, 0.5 was medium, and 0.8 was large. A *within-group* ES of 0.5 was considered small, 0.8 was medium, and 1.1 was large (Roth, Fonagy, Parry, Target, & Woods, 1996).

Feedback given by the athletes was analysed by calculating frequencies. In the qualitative data the number of participants in the intervention team was 25 players while in the quantitative data it was 24. This was because one of the players was excluded from the quantitative data analysis due to her injury and inability to play and practise, therefore the analysis of performance was not adequate. The injured player was included in the qualitative analysis since she participated in the intervention.

RESULTS

General well-being

The results showed that there was no significant difference in how the measures of general well-being (FFMQ, AAQ, PSS and MHC-SF) changed between intervention and control groups during the three measurements (pre-, post- and follow-up) (TABLE 2). Also between group effect sizes (Hedge's g) were small both at post- and follow-up measurements (0.04-0.44). Therefore the ACT-based intervention did not seem to have an impact on psychological measures of over-all well-being when analysing all participants.

When analysing separately those participants reporting low level of well-being, mindfulness and psychological flexibility, and high level of stress (using the cut-off equal to median), change in experienced stress (PSS) during intervention (pre – post measurement) between the groups was different ($F(1, 24) = 4.42, p=0.046$). A moderate difference between group effect size was observed at post-measurement (see Table 3). However, when analysing the whole study period (pre-post-follow-up) there were not any statistical differences in change between groups. This was due to that there was an increase in the scores of PSS in the intervention group from post- to follow-up measurements.

Within group effect sizes for measures, which only included those participants reporting low level of psychological flexibility (AAQ), mindfulness skills (FFMQ), general well-being (MHC-SF) or high level of experienced stress (PSS), showed that in the intervention team there was large change in AAQ (pre – post, $g = 1.13$); moderate change in PSS (pre – post, $g = 0.85$); and small change in FFMQ (pre – post, $g = 0.55$), and PSS (pre – follow-up, $g = 0.63$). Also, in the control team there was small change in PSS (pre – follow-up, $g = 0.58$).

TABLE 2. Psychological measures of over-all well-being of both teams (Intervention group, n=24; Control group, n=23) pre-, post- and follow-up measurements, repeated measurements of variance (MANOVA), effect sizes (Hedge's g)

	Pre Mean (sd)	Post Mean (sd)	Follow-up Mean (sd)	F (df=2)	Post g	Follow-up g
FFMQ						
Intervention	131.92 (13.49)	135.08 (16.86)	133.83 (16.57)	0.57ns	0.13	0.08
Control	126.30 (11.80)	127.09 (13.68)	125.87 (16.15)			
AAQ						
Intervention	15.75 (5.77)	14.75 (5.10)	15.79 (6.03)	0.73ns	0.24	0.44
Control	20.22 (6.73)	18.48 (7.51)	18.74 (7.28)			
PSS						
Intervention	14.71 (6.22)	13.04 (5.05)	13.83 (5.69)	0.62ns	0.33	0.43
Control	18.30 (6.18)	18.26 (5.55)	18.17 (4.98)			
MHC-SF						
Intervention	49.92 (11.80)	51.21 (11.58)	51.29 (11.54)	2.03ns	0.04	0.31
Control	43.74 (14.53)	45.70 (12.29)	41.52 (14.17)			

FFMQ= Five Facet Mindfulness Questionnaire

AAQ= Acceptance and Action Questionnaire

PSS= Perceived Stress Scale

MHC-SF= Mental Health Continuum Short Form

ns=no significance

TABLE 3. Psychological measures of over-all well-being of the half of the participants who reported low level of psychological flexibility (AAQ), mindfulness skills (FFMQ), general well-being (MHC-SF) or high level of experienced stress (PSS) in pre-, post- and follow-up measurements, repeated measurements of variance (MANOVA), effect sizes (Hedge's g)

	Pre Mean (sd)	Post Mean (sd)	Follow-up Mean (sd)	F (df=2)	Post g	Follow-up g
FFMQ						
Interv. (n=10)	119.80 (7.76)	123.10 (7.43)	121.50 (10.20)	0.59ns	0.47	0.27
Control (n=15)	119.80 (7.71)	119.77 (9.69)	118.07 (11.33)			
AAQ						
Interv. (n=10)	21.40 (3.90)	18.70 (2.58)	21.00 (5.29)	0.52ns	0.42	0.19
Control (n=15)	23.53 (6.02)	22.40 (6.20)	22.60 (5.80)			
PSS						
Interv. (n=10)	20.90 (4.10)	16.00 (5.35)	17.60 (5.34)	1.88ns	0.67	0.02
Control (n=16)	21.13 (5,01)	20.00 (4,69)	18,75 (5,01)			
MHC-SF						
Interv. (n=10)	38.30 (8.45)	41.00 (10.66)	41.60 (10.80)	1.36ns	0.12	0.46
Control (n=15)	35.53 (10.69)	39.37 (10.10)	33.80 (10.63)			

FFMQ= Five Facet Mindfulness Questionnaire

AAQ= Acceptance and Action Questionnaire

PSS= Perceived Stress Scale

MHC-SF= Mental Health Continuum Short Form

ns=no significance

Sports related factors

The results showed that there was no significant difference in how the measures of sports-related factors (GEQ, self- and coach rated performance) changed between intervention and control groups during the three measurements (pre-, post- and follow-up) (Table 4). However, self-confidence in sports changed differently between the two groups during the intervention (pre- and post-measurements), $F(1, 45) = 5.755$, $p < 0.05$. Yet, there was a trend for a significant interaction effect, $F(2) = 2.767$, $p = 0.068$, when all three measurements (pre, post, and follow-up) were included in the analysis. When calculating the within effect sizes for the two teams, only GEQ (pre – follow-up) of the control team showed small change ($g = 0.52$).

When the participants were divided by the median and only those reporting low self-confidence, low GEQ and low performance, and those who's performance was evaluated to belong to the lower half of the athletes by the coaches, at the beginning of the study were analysed, change in self-confidence in sports was different between the two groups during the whole study period. Self-confidence increased significantly in the intervention team compared to control team (Table 5). Also effect sizes show moderate clinical difference in self-confidence in sports between both the groups at post- and follow-up measurements (Table 5). Within group effect sizes for measures, which only included those scoring the weakest half of the participants (the lowest or the highest scores), in the intervention team there was a small effect of the intervention in self-confidence in sports (pre – follow-up, $g = 0.65$). In the control team, there was a small change in coaches' evaluation of the performance from pre to post ($g = 0.65$).

In the intervention team the correlation between athletes' self-evaluation of performance and coaches' evaluation of performance was relatively high (pre: $r = 0.50$, $p = 0.012$, $n = 24$; post: $r = 0.50$, $p = 0.012$, $n = 24$) both in pre- and post-measurements. However there was no significant correlation in follow-up measurements ($r = 0.22$, $p = 0.296$, $n = 24$).

TABLE 4. Sports-related measures of both teams pre-, post- and follow-up-measurements, repeated measurements of variance (MANOVA), effect sizes (Hedge's g)

	Pre Mean (sd)	Post Mean (sd)	Follow-up Mean (sd)	F (df=2)	Post g	Follow-up g
S-Conf.						
Intervention	69.46 (22.29)	75.33 (18.00)	75.63 (15.53)	2.77ns	0.37	0.38
Control	66.13 (14.26)	66.72 (15.57)	67.65 (14.39)			
GEQ						
Intervention	129.75 (15.13)	128.33 (15.80)	129.21 (17.18)	1.58ns	0.13	0.39
Control	126.87 (11.93)	123.61 (13.83)	119.91 (15.21)			
Perf.						
Intervention	3.76 (0.44)	3.78 (0.45)	3.79 (0.50)	0.11ns	0.07	0.08
Control	3.64 (0.42)	3.69 (0.43)	3.70 (0.41)			
Perf. Coach						
Intervention	3.56 (0.52)	3.54 (0.50)	3.51 (0.50)	0.98ns	0.21	0.22
Control	3.78 (0.35)	3.67 (0.42)	3.63 (0.39)			

S-Conf.=Self-confidence in sports

GEQ= Group Environment Questionnaire

Perf.= Athletes Self-Rating Scale of Performance

Perf.Coach= Coach's Rating Scale of Athletes Performance

ns=no significance

TABLE 5. Sports-related measures of the half of the participants who reported the lowest scores in each measure of both teams pre-, post- and follow-up-measurements, repeated measurements of variance (MANOVA), effect sizes (Hedge's g)

	Pre Mean (sd)	Post Mean (sd)	Follow-up Mean (sd)	F (df=2)	Post g	Follow-up g
S-Conf.						
Interv. (n=11)	52.18 (22.04)	61.91 (17.15)	65.64 (16.16)	7.23**	0.59	0.75
Control (n=15)	58.00 (8.90)	58.07 (11.38)	60.33 (10.68)			
GEQ						
Interv. (n=11)	116.73 (11.01)	115.27 (11.80)	117.36	0.22ns	0.05	0.18
Control (n=13)	117.85 (7.02)	117.89 (14.30)	116.23			
Perf.						
Interv. (n=12)	3.38 (0.23)	3.49 (0.20)	3.45 (0.29)	1.17ns	0.20	0.57
Control (n=12)	3.32 (0.20)	3.47 (0.33)	3.54 (0.29)			
Perf. Coach						
Interv. (n=15)	3.23 (0.34)	3.25 (0.36)	3.25 (0,39)	1,86ns	0.61	0.48
Control (n=8)	3.43 (0.21)	3.26 (0.28)	3.31 (0.31)			

S-Conf.=Self-confidence in sports

GEQ= Group Environment Questionnaire

Perf.= Athletes Self-Rating Scale of Performance

Perf.Coach= Coach's Rating Scale of Athletes Performance

ns=no significance

** p<0,01

Correlations between changes in the measurements

The correlation matrix (Table 6) shows correlations between the changes from pre- to post-measurement, and from pre to follow-up measurement in both groups. The change in self-rating of performance during the intervention (Post-Pre) was positively related to changes in mindfulness skills (FFMQ, $r = 0.50$, $p < 0.05$) and self-confidence in sports (S-conf., $r = 0.54$, $p < 0.01$) during the intervention (PP). This suggested that increase in self-rated performance was associated with increase in mindfulness skills and self-confidence. Corresponding correlations in the control group were lower ($r = 0.06$ - 0.29), and non-significant. Change in self-ratings of performance (Perf) of the intervention team from pre to follow-up (FP) was significantly related to changes in mindfulness skills (FFMQ, $r = 0.56$, $p < 0.01$), perceived stress (PSS, $r = 0.60$, $p < 0.01$), psychological flexibility (AAQ, $r = 0.60$, $p < 0.01$), general well-being (MHC, $r = 0.43$, $p < 0.05$) and self-confidence in sports (S-Conf., $r = 0.44$, $p < 0.05$) from pre- to follow-up measurement (FP). In the control team change in self-rating of performance from pre to follow-up (FP) was related to changes in general well-being (MHC, $r = 0.42$, $p < 0.05$) and group environment (GEQ, $r = 0.44$, $p < 0.05$) from pre- to follow-up measurement (FP).

Low correlations were found in evaluations of performance rating changes (from pre to post, and from pre to follow-up) between athletics and coaches in both groups ($r = 0.02$ - 0.23). Low and non-significant correlations were also found between coaches rating of athletes' performance changes and changes in well-being and sport-related measurements. Only the following significant associations were observed. In the intervention group, the changes in coaches' performance ratings from pre to follow-up correlated significantly with change from pre to follow-up in athletes' evaluation of the group environment and cohesion (GEQ, $r = 0.45$, $p < 0.05$). In the control group changes in coaches' performance ratings from pre to follow-up correlated significantly with change from pre to follow-up in athletes' evaluation of stress (PSS, $r = -0.43$, $p < 0.05$) and self-confidence in sports ($r = 0.49$, $p < 0.05$).

In the intervention group significant correlations were observed between changes in psychological flexibility (AAQ) from pre to post and changes in group environment (GEQ) from pre to follow-up ($r = 0.41$, $p < 0.05$). This suggested that increase in psychological flexibility during intervention was related to improved group environment during the whole study period. Correlations were also observed between the change in experienced stress (PSS) from pre to post and the change psychological flexibility (AAQ) from pre to follow-up in the intervention group ($r = 0.54$, $p < 0.01$). This suggested that decrease in experienced stress during intervention was related to increase in psychological flexibility during the whole study period. Also change in mindfulness skills (FFMQ) from pre to post was correlated with change in experienced stress (PSS) from pre to follow-up in the

intervention group ($r = -0.42$, $p < 0.05$) and in the control group ($r = -0.61$, $p < 0.01$). This suggested that increase in mindfulness skills during the intervention was related to decrease in experienced stress (PSS) during the whole study period. No correlation was found between amount of homework and change in measures.

Athletes' experiences from the intervention

Twenty players (80%) reported that they were satisfied with the program and only one of the players was not satisfied. Four of the players were neither satisfied nor dissatisfied. 18 out of 25 players (72%) would recommend this kind of psychological coaching for other athletes and 17 out of 25 players (68%) believed that they would utilize the learnt skills in the future. When asking about the experienced benefits, each athlete chose benefits from the given options and it was possible to choose several options (see Figure 2). Only one of the 25 players in the intervention team reported that she did not benefit from the programme. The highest frequency (17/25, 72%) was in the option "I got new methods to handle stress and anxiety" (Figure 2).

TABLE 6. Correlations between differences in measures between pre- and post-measurements (PP) and pre and follow-up measurements (FP).

			FFMQ		PSS		AAQ		MHC		S-Conf.		GEQ		Perf.		Perf. Coach	
			PP	FP	PP	FP	PP	FP	PP	FP	PP	FP	PP	FP	PP	FP	PP	FP
FFMQ	PP	I	1															
		C	1															
	FP	I	.736**	1														
		C	.634**	1														
PSS	PP	I	-.266	-.250	1													
		C	-.785**	-.594**	1													
	FP	I	-.416*	-.473*	.694**	1												
		C	-.609**	-.657**	.816**	1												
AAQ	PP	I	-.232	-.433*	.579**	.377	1											
		C	-.609**	-.375	.480*	.381	1											
	FP	I	-.297	-.489*	.542**	.581**	.476*	1										
		C	-.518*	-.468*	.405	.529**	.754**	1										
MHC	PP	I	.164	.394	-.248	-.467*	-.264	-.033	1									
		C	-.002	.002	-.108	-.239	.293	.140	1									
	FP	I	.327	.562**	-.171	-.495*	-.257	-.302	.716**	1								
		C	.184	.270	-.279	-.380	.224	-.092	.522*	1								
S-Conf.	PP	I	.114	.057	-.211	-.128	-.097	.189	.325	-.073	1							
		C	.029	.141	-.236	-.266	-.002	-.136	-.377	-.058	1							
	FP	I	.135	.105	-.312	-.419*	.066	-.211	.498*	.263	.649*	1						
		C	.025	.241	-.163	-.440*	.038	-.126	-.272	.024	.762**	1						
GEQ	PP	I	.172	.230	.090	-.086	-.366	.081	.176	.108	.130	-.061	1					
		C	.436*	.236	-.358	-.290	-.399	-.394	-.077	.006	.052	.075	1					
	FP	I	.259	.272	-.044	-.126	-.407*	-.188	.188	.251	-.052	-.010	.705*	1				
		C	.187	.261	-.098	-.197	.098	.014	.100	.246	-.186	-.018	.595**	1				
Perf.	PP	I	.502*	.550**	-.193	-.359	-.079	-.177	.313	.092	.542**	.504*	.224	.133	1			
		C	.057	.105	-.034	-.025	.300	.081	-.119	.361	.294	.357	.233	.382	1			
	FP	I	.280	.562**	-.335	-.596**	-.178	-.569**	.217	.427*	.100	.437*	.129	-.033	.492*	1		
		C	.052	.153	.168	-.068	.401	.004	.056	.421*	.121	.331	.144	.442*	.779**	1		
Perf. Coach	PP	I	-.140	-.327	.209	.117	.130	.239	-.204	-.052	-.052	-.109	.315	.385	-.144	-.162	1	
		C	-.196	.009	.183	.068	-.136	.087	-.285	-.274	.130	.129	.046	.178	-.121	-.068	1	
	FP	I	-.144	-.368	.106	-.001	0.000	.159	-.109	-.145	-.081	-.093	.387	.452*	-.110	-.231	.827**	1
		C	.167	.215	-.346	-.426*	-.233	-.078	-.207	.067	.396	.486*	.171	.118	.019	.039	.590**	1

PP = post – pre change – change during intervention

FP = follow-up – pre change – difference between follow-up and pre-measurements

I=Intervention team

C=Control team

* = p<0.05

**= p<0.01

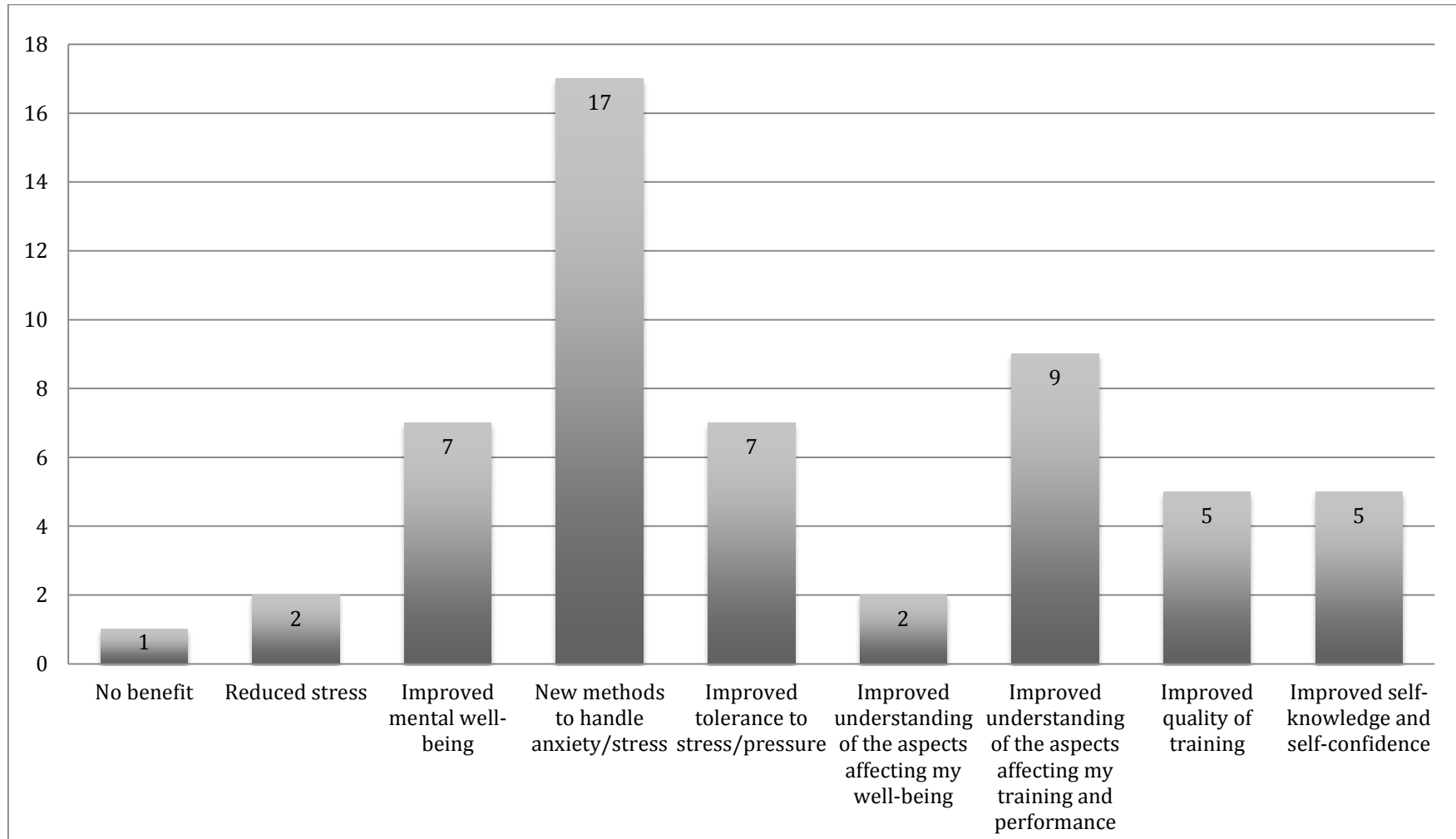


FIGURE 2. Frequencies of the experienced benefits from the intervention

DISCUSSION

The study aimed at investigating if the acceptance and commitment therapy based methods are usable for psychological coaching purposes. The purpose was to investigate whether a six-week ACT-based psychological coaching intervention would have a positive effect on psychological and sports-related factors of floorball players. We hypothesized that ACT-based intervention would increase general well-being of athletes and enhance the performance as compared to a control group not receiving any intervention. We were also interested in learning how the athletes experienced the ACT-based psychological coaching programme. The intervention affected athletes' self-confidence in sports positively and lowered the level of experienced stress for those athletes who were the most stressed in the beginning of the research. However, the overall results showed that the ACT-based intervention did not have a significant effect on athletes' psychological well-being nor on self-evaluated performance nor group environment. Our study was also unable to demonstrate the link between homework assignments and improved general well-being, which has been proved to exist in previous research (Kazantzis et al., 2000).

Although all our hypotheses were not supported, the results suggested that ACT-based approach to psychological coaching may be viable for athletes. The athletes reported benefitting from the intervention in many ways. Some of them told they had been using the learnt skills already in games. This suggests that the skills had become somewhat automatized. Most of the participants declared that they would recommend this kind of intervention to other athletes. The coaches had also seen a positive change in many of the players and in the whole team, for example in self-confidence.

Athletes' feedback suggested that the acceptance and value-based intervention may have positive impact on general well-being. More than half of the players (17/25) in the intervention group reported that they had learnt new methods to handle anxiety and stress. This sustains the idea that psychological coaching for athletes may benefit other areas of life as well, because anxiety and stress does not only happen in sports context. New skills can also be applied to both sports context and other life situations.

The results also give some indication about the effectiveness of the intervention. The results showed a relationship between change in self-rated performance and change in mindfulness skills, and between change in self-rated performance and change in psychological flexibility. This suggested that when self-rated performance enhanced both mindfulness skills and psychological flexibility increased. These results are supported by previous research as Gardner and Moore (2004a)

suggested that greater self-awareness may lead to enhanced psychological flexibility in sports performance. Acceptance of negative internal states might be one factor that has a positive impact on athlete's self-confidence as a player. The ability to be more mindful and accepting toward internal states might also help the athletes to cope better with stress in general, as well as in performance related situations. Mindful, non-judging and present-moment attention keeps the focus on task-relevant cues in the service of valued athletic goals.

The most interesting finding was that the intervention affected athletes' self-confidence in sports positively. Self-confidence improved during the intervention and retained the gained level. It could be argued that this was an important discovery. The athletes' experiences supported this finding for five (5/25) players reported an increase in self-knowledge and self-confidence. The fact that the gained level of self-confidence retained until the follow-up measurements is important since it indicates that the gained self-confidence level could remain after the active intervention period. Our results also showed that change in self-confidence is positively related to change in self-evaluated performance. This finding corroborates the previous research in this field. Woodman and Hardy (2003) found out in their meta-analysis that self-confidence affects the performance positively.

We found that the change in self-evaluated performance was related to several measures in the intervention team. Change in self-evaluated performance was positively related to change in mindfulness skills. This would suggest that when the athlete is more aware of the present moment and more mindful, his/her sport performance is better. This can be seen on both positive and negative aspects. When mindfulness skills increase one performs better because of better presence. The other option is that only mindfulness skills increase and one might only interpret one's performance higher even if the performance has not developed. This can produce problems if the players do not know their actual performance level, and possibly overrate it, which may lead to higher risk-taking and mistakes in the game.

On the other hand, fear of mistakes could lead to experiential avoidance, which may prevent the athlete from playing on their actual level of performance. In order the game to succeed players need to take risks and accept the fear of failing. Acceptance is the key to psychological flexibility (Hayes et al., 2006), which was related to self-evaluated performance in this study. That is, when psychological flexibility increases, self-evaluated performance increases.

As well as psychological flexibility, change in self-evaluated performance was also linked to change in general well-being. This was also true for the control team. Change in experienced stress was negatively related to change in self-evaluated performance during the whole study period. This suggests that when experienced stress decreased, evaluation of performance increased.

The relationship between changes in general well-being measures and self-evaluated performance supports the use of ACT as a psychological coaching method. ACT is not only targeted to support the athlete in the sports context, but also to support him/her in life in general. Our results showed that general well-being and self-evaluated performance go hand-in-hand. Overall, there seems to be good support to recommend ACT to be used in psychological coaching for athletes.

Evaluation of the research

There are several possible reasons for obtaining only a few significant effects of the intervention. It is possible that ACT-based intervention is ineffective for increasing sport performance. It is also possible that the current intervention was too short to have large impact on the athletes. Another thing that might have weakened the results is a small sample size. Further, one possible factor influencing the results could have been that the starting levels of athletes in psychological measures were too high, making improvements of the scores challenging.

Another explanation could be the challenges provided by sports context. Applying the skills in floorball is challenging because of its fast pace and many simultaneous tasks demanding attention on the field. It takes a lot of practise before it is possible to put the learnt skills into action, especially in distressing sport situations such as games. The more automatized the skills are the easier it is to apply them in various situations. Taken the fast-paced nature of floorball into account, the skills need to be highly automatized before applying them in sport context is possible. Therefore it is possible that the intervention was too short, in which case the athletes did not have enough time to practise the skills to automatize them.

Another possible limitation of the study is associated with the difficulty of measuring individual performance. Floorball is a group sport and individual performance level is not easily measured when compared to sports where you can measure the performance for example by improvement in time or centimetres. We measured performance by self-evaluation of performance and by coach's evaluation of performance and even though these measures were partially correlated with each other, they are still not unambiguous measures of the performance in floorball.

It was natural to implement this intervention as a group intervention because floorball is a team sport. Still group interventions have both pros and cons. The pros of group interventions are definitely its cost-effectiveness and peer support. Also when executed in the beginning of playing season it might have qualities that promote team cohesion. Some of the new players in the intervention team reported that they experienced easier assimilation to the team. Still this was not supported by the statistical results. One of the disadvantages of group intervention is that it cannot fulfil all the individual needs. Some of the players might have needed more time to assimilate the new perspective,

or they might have needed more time with some parts of the intervention, while other players would have liked to proceed faster with the process.

Individual differences among the athletes made the groups diverse both internally and between each other. Therefore comparison between the groups was challenged by the fact that the intervention and control group were dissimilar already in the starting point in some measures. Also the age distribution was different between the groups as the intervention group had significantly higher average age. The age can have a difference in these kinds of interventions since the mindfulness skills that were taught can develop within age. This explanation would agree with findings of Shallcross, Ford, Floerke and Mauss (2013) who suggested that increasing age is related to increasing acceptance of negative emotions.

Another limitation of this study is the fact that the groups were not randomized. Offering the intervention only for some randomly chosen players of a team would not have been ethical, and difficult to accomplish. Secondly, it was practical to have teams participate in the study instead of randomly chosen individuals because of limited time and schedules of the athletes. Also two teams from the same national league who performed approximately on a same level enabled easier comparison between control and intervention groups. Therefore it was justified not to use randomization, even though it weakens the validity of the study.

Acceptance and commitment therapy as a theory and a method gave the framework for this research. The understanding of the basic elements of acceptance and commitment therapy and its fundamental background is essential for the leaders or coaches of the groups. Because the skills taught in the programme are experiential, they cannot be explained only verbally, and teaching these skills to athletes could be difficult if one is not acquainted with the philosophy of ACT. This is a possible limiting issue when using these methods in psychological coaching programs. On the other hand, the ACT-based interventions usually follow a manual similar to the one in this research. The manual consists of metaphors and mindfulness exercises and it is easy to follow when one is familiar with ACT. Altogether, ACT-based psychological coaching is a method that can be used by psychologists and experts of psychological coaching but it is not easily taught to sport coaches. It can be questioned whether it is even important for coaches to use this kind of tool or should this be a method only for professionals of psychological coaching.

In the future it would be interesting to investigate how acceptance and value-based interventions can be applied to other team sports. The application of the intervention for different sports and different target groups would give us more information of its usability. In this study all of the athletes were women so it will be important to test this kind of intervention also with male athletes

to see how they experience it. It would also be interesting to see if this kind of intervention would work as a method for individual psychological coaching.

All together this study presented an example of how acceptance and value-based psychological coaching methods could be applied for athletes. The field of psychological coaching has mainly used the methods of PST during the past years, and new methods in the field are welcome. ACT-based psychological coaching could be one of them.

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