"Personality, Passion, Self-esteem and Psychological Well-being among Junior Elite Athletes in Norway"

By

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Abstract

Personality research among athletes seems to have obtained less interest in recent years after much focus until the 1990s. This decline was obviously a result of ill conducted "personology" research, and a greater focus on psychological state versus trait in the sport psychology community. The present study explored personality dimensions, as measured by the Junior Temperament and Character Inventory, passion, self-esteem, and well-being among junior elite athletes. In addition, the athletes were compared with non-athletic peers to investigate if they had a personality profile which appears to be more beneficial for athletes. Female athletes scored significantly higher on the personality dimensions Reward Dependence and Cooperativeness, and significantly lower on Self-esteem than their male counterparts. Both obsessive and harmonious passion was found to be more pronounced among those competing at an international level as compared with athletes competing at a local level. In addition, the athlete sample scored significantly higher on Persistence and Self-Directedness and lower on Harm Avoidance than non-athletes. The use of the J-TCI as a measure of personality yielded interesting results, which should be relevant for the sport psychology community and increase our understanding of the underlying factors and mechanisms of elite sport. In future research, the predictive power of personality on especially performance in different sports should be investigated.

Keyword: *personality, passion, self-esteem, well-being, athlete, sport psychology, junior athlete, elite athlete*

Abstrakt- Norsk versjon

Personlighetsforskning blant idrettsutøvere virker å ha mottatt mindre interesse i nyere tid. Denne nedgangen var tydelig resultat av mye dårlig "personologi" forskning, og et større fokus på psykologisk tilstand (state) enn psykologisk trekk innenfor idrettspsykologi. Denne studien undersøkte personlighetsdimensjoner, som målt av Junior Temperament and Character Inventory, lidenskap, selvfølelse og velvære blant unge eliteutøvere. I tillegg ble idrettsutøverne sammenlignet med en gruppe likestilte som ikke var idrettsutøvere, for å undersøke om de hadde en personlighetsprofil som synes å være mer fordelaktig for å bedrive idrett. Kvinnelige utøvere hadde signifikant høyere verdier på personlighetsdimensjonene Reward Dependence og Cooperativeness, og lavere selvfølelse enn mannlige utøvere. Både uharmonisk og harmonisk lidenskap var mer fremtredende hos de utøverne som konkurrerte på internasjonalt nivå når de ble sammenlignet med utøvere som konkurrerte på lokalt nivå. I tillegg hadde idrettsutøverne signifikant høyere verdier på Persistence og Self-Directedness, mens de hadde lavere score på Harm Avoidance sammenlignet med de som ikke var idrettsutøvere. Bruken av J-TCI som et mål på personlighet ga interessante resultater, som burde være relevant for idrettspsykologien, og gi en bedre forståelse av underliggende faktorer og mekanismer i eliteidrett. Fremtidig forskning bør undersøke prediksjonskraften av personlighet på prestasjon i forskjellige idretter

Nøkkelord: *personlighet, lidenskap, selv følelse, velvære, idrettsutøver, idrettspsykologi, junior utøver, eliteutøver*

Preface

The idea of this projects stems from the authors own "failed" athletic career, and interest in which kind of psychological aspects are important for an elite-athlete. With previous fascination with personality as an aspect of behavior, the thought of exploring personality dimensions among world class athletes emerged. After an informal talk with Professor Martin Eisemann the recruitment of world class athletes was deemed to be too ambitious, and the choice to explore future world class athletes was made. We agreed to explore the topic further by collaborating in an empirical study assessing what we regarded as important dimensions of athletes. Eisemann contributed with three of the scales that were used in the project, while the author reviewed the field of sport psychology and came up with the passion scale as a valuable measure.

The process of creating and carrying out this project has been a joint venture by the author and his supervisors. The author has administered the practical details of the project, from graphical layout of the questionnaire to holding information meetings for the students at the participating schools. The author has been responsible for the recruitment of participants which has been done by e-mail, personal visits and phone. Most of the instruments used in the survey are well established and validated self-report scales, although one of the scales was translated by the author and reviewed by Eisemann. All the statistical analyses have been performed by the author under the guidance of both Eisemann and Vangberg. The project as a whole has been a close collaboration between the author and supervisors.

This project has enriched the author by giving a valuable insight to a scientific community that could be applicable in areas besides sport psychology. This project has given the author valuable experience in carrying out research and cooperation. In addition, the project has given the author many opportunities to present both the project and the results to

different audiences, which will culminate in a poster presentation at the 13th European Congress of Sport Psychology at Madeira, Portugal in July.

Lars Bauger   Martin Eisemann   Hans Christian Vangberg

Student   Supervisor   Supervisor

"I knew that I had come face to face with someone whose mere personality was so fascinating that, if I allowed it to do so, it would absorb my whole nature, my whole soul, my very art itself."

Oscar Wilde (Wilde & Bristow, 2006)

Personality

The conception that individuals could be categorized into different personality types is about 2400 years old from the time of Hippocrates. At that time it was believed that people were developing a personality trait as a result of their bodily fluids, blood, yellow and black bile and phlegm. Therefore an individual who was depressed (`melancholic`) would have an excess of black bile in his body (Carver & Scheier, 2004). In more recent times Carl Jung hypothesized that people could be divided into two different personality types, extrovert or introvert. An extrovert prefers to be in company of other individuals as opposed to spending time alone. On the other hand introvert like to be alone and could be perceived as shy. Being either an extrovert or introvert according to these previous typologies, newer theories propose the existence of a continuum among personality traits, and individuals could have higher or lower scores on these traits. Raymond Cattel derived his 16 dimensions of personality by using factor analysis on statements presented to participants. Hans Eysenck also used factor analysis to support his theory of the two personality dimensions introversion vs. extraversion and emotionality vs. stability (Eysenck & Eysenck, 1975)

When the 20th century came to a close a new model gained importance in personality trait theory, this model was the five factor model or the "Big Five". This theory is based on the accumulated data over the last 50 years within personality research. These five factors also seem to be present in different cultures with different languages (Eap et al., 2008). Although there is variation in the five factor theories, they seem to agree that there are five factors but disagree the labeling of those five. The factors are usually: extraversion, agreeableness,

conscientiousness, neuroticism and openness to experience (Carver & Scheier, 2004; Svartdal, 1997). A personality theory that includes seven traits, four being measures of temperament and three measuring character, has also been proposed (Cloninger, Svrakic, & Przybeck, 1993). The resulting instrument is called Temperament and Character Inventory (TCI). The four temperament factors are thought to be genetically homogenous and independent dimensions of temperament, being labeled: Harm Avoidance (HA), Novelty Seeking (NS), Reward Dependence (RD) and Persistence (P). These dimensions are independently heritable, manifest early in life and involve preconceptual biases in perceptual memory and habit formation. In addition, three character dimensions have been proposed: Self-Directedness (SD), Cooperativeness (CO), and Self-Transcendence (ST). These character dimensions represent traits that are somewhat heritable and moderately influenced by social learning (Brändström, Sigvardsson, Nylander, & Richter, 2008; Cloninger, Przybeck, Svrakic, & Wetzel, 1994; Cloninger et al., 1993).

Personality among athletes

Personality research in sport psychology has since the 1990s been almost nonexistent due to a view that the previous personality research had often been badly conducted and offered unsubstantiated conclusions. This has lead personality to be a dirty word in sport psychology (Auweele, Nys, Rzewnicki, & Van Mele, 2001). According to Cashmore (2002) personality research in sport has almost exclusively preferred the use of the Minnesota Multiphasic Personality Inventory (MMPI). The MMPI is a long true-false inventory which was developed as a measure of abnormality (Carver & Scheier, 2004; Cashmore, 2002). The MMPI has been the inventory of choice in research since it was assumed that the personality traits measured by the MMPI were best at differentiating successful and unsuccessful athletes. Almost all studies that are based on MMPI as an assessment have used the original version, developed in the 1930[s]. This is problematic since the original MMPI was developed with a

sample that was limited both ethnically and geographically, a fact that compromises the interpretation of scores from other populations. The other prominent inventory used in sport has been the Profile of Mood States (POMS). Results from POMS studies showed that athletes exhibited what Morgan (1980) called an iceberg profile. The iceberg profile shows that athletes tended to have lower scores on four of the five "mood states" compared with non-athletes. These four "mood states" is tension, fatigue, depression and confusion. According to this iceberg profile, athletes have higher scores on vigor than their non-athlete counterparts. Some results also show that successful athletes have a more positive mood profile, i.e. lower scores on the four states mentioned above, than unsuccessful athletes. However, these differences are regarded as too small and hence not reliable in predicting performance among athletes (Hirschhorn, 2006).

Personality traits among athletes compared to the normal population seem to be inconclusive or diffuse; some researchers have found no difference (Fuchs & Zaichkowsky, 1983), while others reported unique scores for extraversion and neuroticism (Morgan, 1980). It has been proposed that there is a significant difference between professional and amateur athletes on psychoticism, a trait characterized by aggressiveness and interpersonal hostility (Eysenck, Nias, & Cox, 1982). Some researchers have theorized that successful athletes should score higher on extraversion compared to amateur athletes, since the former have a lower activation level and therefore seek stimulation by physical activities (Eysenck et al., 1982; Hirschhorn, 2006). With a lower level of activation, extraverts would have a higher tolerance for pain, which in turn helps the athlete complete the often painful training regime that is required to increase level of fitness. Eysenck et al. (1982) suggested that neuroticism could be an important trait when it comes to athletes, since anxiety is a factor in neuroticism. This trait can enhance performance as well as deter the athlete from exerting the most appropriate behavior in important situations. This means that the optimal level of neuroticism

would differ from sport to sport, and a higher level would not be desirable in high concentration sports. According to Eysenck et al. (1982) a higher score on psychoticism would benefit the athlete, since anti-social and aggressive tendencies would be an advantage in competition, although this would not be beneficial for all sports. Hirschhorn (2006) found that an athlete's talent concurred with personality factors such as mental toughness, need for success, dominance and high energy level.

There appears to be some difference between amateur and professional athletes concerning conscientiousness, self control, intelligence and anxiety (Jarvis, 2006). These differences were revealed when using MMPI and Cattel's 16PF. It can be difficult to interpret these results since the studies did not define the difference between elite athletes and amateur athletes. When Dowd and Innes (1981) compared results on 16PF between athletes ranked as top 15 in squash and volleyball, with athletes ranked lower, results showed that the top ranked athletes had higher scores on intelligence and lower scores on anxiety. According to these results performance can be linked to extraversion and emotional stability, but we cannot conclude that individuals perform better because they are more extraverted and less anxious (Eysenck et al., 1982). Possibly, athletes who perform at a high level are less anxious since they more often win their matches. When using the five-factor model of personality to predict performance in female college soccer players, the only personality factors that was significantly related to performance was neuroticism and conscientiousness, with lower scores on neuroticism related to higher scores on performance (Piedmont, Hill, & Blanco, 1999). Conscientiousness was positively correlated with performance, which is expected since this factor includes the individuals will to achieve. According to Morgan (1980) personality factors have been consistently shown to account for 20 % to 45 % of the variance in athletic performance, and were therefore viewed as an important aspect of performance levels between athletes.

When athletes involved in team sports are compared with athletes in individual sports, the former score, not surprisingly, higher on extraversion than athletes competing in individual sports (Booth, 1958). There are also differences between athletes within the same sport. In the sport of track and field, sprinters and throwers are more extraverted than middle distance runners. One study even showed that as the distance increases the level of extraversion decreases, and long distance runners turned out to be more introverted (Clitsome & Kostrubala, 1977). There was also a tendency for the better runners being more introverted.

Passion

"I love to play golf, and that's my arena. And you can characterize it and describe it however you want, but I have a love and a passion for getting that ball in the hole and beating those guys." Tiger Woods (Woods, n.d.)

An interesting aspect that has been shown to have an effect on athletes is the passion they have for their sport. Vallerand et al. (2003) proposed a dualistic model of passion, where they defined passion as a strong inclination toward an activity that people like, that they find important and something they invest time and energy. Therefore they would have to spend time on the activity and like the activity, for it to be defined as a passion. Vallerand et al. (2003) proposed two types of passion, one being harmonious and the other being obsessive. The difference between obsessive and harmonious passion consists in how the passionate activity is internalized into an individual's core identity. Obsessive passion is a result of a controlled internalization of the activity, which originates from pressure from some contingency attached to the activity. This can be social acceptance or self-esteem, or because the excitement from the activity becomes uncontrollable. It is important to mention that individuals with an obsessive passion for an activity still like to exert their activity, but they might feel a compulsion for their activity even when they should not. Vallerand et al. (2007) states that obsessive passion is expected to lead to a rigid form of Persistence, since it occurs

even when there is personal costs, such as damage to relationships and failed work commitments. On the other hand, harmonious passion is a result of an autonomous internalization of the activity into the individual identity, this happens when the individual has freely chosen that the activity is important to them, without any contingencies attached to it (Donahue, Rip, & Vallerand, 2009; Mageau et al., 2009; Vallerand, 2008; Vallerand et al., 2003; Vallerand et al., 2008; Vallerand et al., 2007). The activity is still occupying a significant space in the individual identity, but it is not an overpowering force and is in harmony with other aspects of the individual. Vallerand et al. (2007) hypothesized that harmonious passion will lead to greater positive affect and less negative affect than obsessive passion. This is a result of the individuals more flexible approach to the activity, which leads to better concentration and flow when engaging in the activity.

An important aspect of performance is deliberate practice as shown by Ericsson & Charness (1994). They revealed that people, who attain exceptional performance, undergo an active learning process during which they improve their abilities and skills. The deliberate practice gives optimal opportunities for learning and acquisition of skills since it provides immediate feedback to the individual and knowledge of results that are relevant to performance. Vallerand et al. (2007) suggested that passion is a major motivational force in deliberate practice, it is a fuel that helps individuals to complete long and frustrating training sessions. In that sense passion does not influence performance directly, but sets things in motion that are needed for deliberate practice. Vallerand et al. (2007) showed that both obsessive and harmonious passion indirectly contribute to performance attainment. At the same time, harmonious passion was the only factor to be positively associated with subjective well-being.

Self-Esteem

Self-esteem is now a household concept and high self-esteem is regarded as something that causes positive outcome in life in general and in specific situations. Self-esteem as a construct has had many varying definitions and ways of measuring, but it in this paper it refers to a person's global evaluation of his or hers overall worthiness (Rosenberg, 1979), and reflects how you feel about your own skills, abilities, and social relationships (Coatsworth & Conroy, 2006). When we hear athletes explain their recent success or failure in the media they often attribute this to either high or low self-esteem. In extreme cases we might see a sports team that has been losing most of their matches in a season, starts winning again after a change in management, and an increase in self-esteem is often mentioned as a contributing factor to this change. The belief that higher self-esteem causes positive outcomes (Blascovich & Tomaka, 1991) has therefore resulted in intervention programs in some areas with the intention to increase self-esteem (Baumeister, Campbell, Krueger, & Vohs, 2003). Many of these intervention programs have been directed towards improving school performance. However, Baumeister et al. (2003) found little evidence for a positive effect in a meta-analysis, on the contrary they found that some of the students with low grades actually performed worse after the intervention.

There seems to be sparse support to the assumption that higher self-esteem causes better performance, whereas it can cause people to persist longer in a task when failing (Baumeister et al., 2003). This would be beneficial for athletes since most sports require some form of tedious practice on the road to mastery. Although there is little evidence of a causal relationship between performance and self-esteem, studies show that these factors are in some way connected (Baumeister et al., 2003; Coatsworth & Conroy, 2006). Many researchers assume that self-esteem influences affect and behavior of individuals (Harter, 2001).

There has emerged empirical evidence supporting a link between participation in sport and higher levels of self-esteem (Deianey & Lee, 1995; Marsh & Kleitman, 2003). Deianey and Lee (1995) argued that highly active individuals score higher on self-esteem than low-active respondents. It is difficult to establish if it is the athletic participation per se or other factors that affect self-esteem. It could be that individuals with a high level of self-esteem for other reasons are more motivated to practice sports than those with lower self-esteem.

Well-being

Physical activity has by many researcher been found to increase the level of subjective well-being and has the ability to energize and produce more positive mood (Fox, 1999). In a popular statement we can say that *"exercise makes you feel good"*. If this would be the case we might expect that an athlete population report higher levels of subjective well-being. However, being an athlete also implies various stress factors which might impact negatively on well-being such as competitions, demanding training regimes, less time for other activities or social relationships. Some researcher have proposed that the basic universal needs of competence, autonomy and relatedness must be satisfied before well-being can be experienced (Ryan & Deci, 2000). Ryan and Deci (2000) argued that contexts that are facilitating autonomy, competence, and relatedness lead to a greater integration of intrinsic motivation. This seems to be of major importance when motivating others in achieving top performance.

Purpose of the study

This study has four main objectives: firstly, to investigate psychological factors such as personality dimensions, passion, well-being and self-esteem among junior-elite athletes; secondly, to investigate if personality dimensions are related to self-reported skill level; thirdly, to investigate differences in personality dimensions between those who attend sport

specific high-schools with those attending general high-schools in Norway; and fourthly, to identify predictors of well-being and self-esteem.

The junior version of the Temperament and Character Inventory (TCI) (Cloninger et al., 1993) was used as a measure of personality. We are not aware of any other study that has used the J-TCI to explore athletes' personality. When we regard personality as an important aspect of performance (Morgan, 1980), it would be interesting to explore this in the framework of Cloninger et al. (1993) biosocial model of personality.

We hypothesize that Persistence, characterized by being hard-working, industrious and ambitious, should be a crucial personality dimension for athletes. The rationale here are the inherent qualities of Persistence would represent a prerequisite for a successful athlete. Further, we regard Harm Avoidance as an important personality dimension for athletes since low scorers are described as relaxed, bold, outgoing and vigorous whereas high scorers are described as worrying, fearful, shy and fatigable. Persistence, which is a temperament dimension, and Self-Directedness, a character dimension are assumed to be positively correlated, since individuals with high scores on Self-Directedness are described as mature, responsible, purposeful and self-accepted (Cloninger et al., 1993).

This study also aims to explore the relationship between personality and passion as well as its relationship with sport preference and level of competition. Another interesting aspect regarding passion in athletes is whether there exists a difference between obsessive and harmonious passion concerning level of competition. Will athletes who have developed a harmonious passion for their sport compete at higher levels than their counterparts with an obsessive passion? We hypothesize that this will vary between types of sport, since some sports require a more rigid training regime than others. Since athletes who have an obsessive passion for their sport, are not in control of the activity, which makes them continue the training even in case of injury (Rip, Fortin, & Vallerand, 2006). We theorize that this behavior

can lead to a lower level of well-being than those who have a harmonious passion for their sport.

The following hypotheses have been formulated:

Hypothesis 1.

There is a relationship between type of passion, various personality traits, self-esteem and well-being.

Hypothesis 2.

There are gender differences concerning Reward Dependence, Cooperativeness and self-esteem.

Hypothesis 3.

Individual athletes will be both less cooperative and reward depending than those competing in team sports.

Hypothesis 4.

Difference in personality traits will emerge between students attending sport-oriented high schools and those attending general high schools.

Hypothesis 5.

There will be specific predictors of both self-esteem and well-being.

Method

Recruitment

To recruit participants to the study we contacted senior high schools in Norway that fulfilled our inclusion criteria of being a sport specific high school. Out of the five schools contacted, three were prepared to participate. The three schools, located in different parts of Norway, were non-profit private schools, where the curriculum is adjusted to the needs of athletes. These schools are in close collaboration with the national sport council and national Olympic committee. The participating schools had both Olympic medal winners and national champions among their alumni. Sport programs the schools were providing included: alpine skiing, football, track and field, handball, cross-country skiing, rifle shooting, swimming, cycling and biathlon.

Participants

Of the 175 participants who entered the study, 139 (79.43 %) completed the questionnaire. The questionnaires were collected during the fall of 2010. The age among participants ranged from 15 to 19 (M = 16.76, SD = .88). 69 (49.3 %) women and 70 (50.4 %) men participated. 90 (64.7 %) of the participants competed in individual sport and 49 (35.3 %) competed in team sports. The participants' level of competition in their sport differed: 8 (5.8 %) competed at the local level, 34 (24.5 %) at the regional level, 82 (59 %) at the national level and 15 (10.8 %) at an international level.

Procedure

All students from the respective schools were invited to participate. They were briefed on the study orally by a researcher in the classroom at the beginning of a lesson. Students were informed about the voluntary character of participation and the possibility to withdraw from the study at any time. The students were guaranteed anonymity. In addition to the oral briefing, all students obtained written information about the study. As an incentive to

participate, the drawing of two iPod nano digital media players was announced. All the participating schools were visited within a two week period during autumn 2010, and all potential participants were briefed on the study as well as how to access the web-based questionnaire. The cut-off point for participation in the study was set to two weeks after briefing of the last school (i.e.15th of October). A week before the given cut-off date, schools were sent a reminder per e-mail concerning deadline.

Measures

The questionnaire was made available, together with information about the study and a link, to the students through the schools web-based learning management system "class fronter". The web-link directed the students to the study which was distributed through the internet based survey tool "Survey Monkey". The study included demographic characteristics, such as age, gender, type of sport, level of competition, self-reported skill level and a set of questionnaires comprising four aspects.

Passion.

The Passion Scale (Vallerand et al., 2003) is comprised of two 6-item subscales: harmonious passion (e.g. "This activity is in harmony with the other activities in my life") and obsessive passion (e.g. "I have difficulties controlling my urge to do my activity"). Responses are given on a 1 (Do not agree at all) to 7 (Very strongly agree) scale. The Passion Scale also includes a four-item criterion subscale that measures whether participants were passionate about their own activity. Psychometric properties of the Passion Scale have been assessed in previous studies which supported its validity and reliability (Vallerand, 2008; Vallerand et al., 2003). The scale had been translated into Norwegian by a native speaker while a bilingual colleague with no knowledge of the original scale translated it back to English. No discrepancies between the two versions emerged. Cronbach alpha (α) for the Passion Scale

were .84 for harmonious passion, .69 for obsessive passion and .92 for passion criterion, respectively.

Personality.

Personality was measured by the Norwegian version of the Junior Temperament and Character Inventory (J-TCI) (Vangberg, Eisemann, & Richter, 2011). The J-TCI contains 103 questions for assessing personality by means of four temperament and three character scales. A total of 60 items comprise the temperament scales; Novelty Seeking (15 items), Harm Avoidance (13 items), Reward Dependence (18 items), and Persistence (14 items), while 43 items comprise the character scales: Self-Directedness (15 items), Cooperativeness (18 items) and Self-Transcendence (10 items). The items have to be rated on a scale from 0 (Totally agree) to 4 (Totally disagree). Sample items are: "I always do my best" and "Most of the time I only do what I really have to do". Cronbach alpha were as following for the J-TCI subscales: Novelty Seeking ($\alpha = .77$), Harm Avoidance ($\alpha = .56$), Reward Dependence ($\alpha = .66$), Persistence ($\alpha = .52$), Self-Directedness ($\alpha = .79$), Cooperativeness ($\alpha = .63$), and Self-Transcendence ($\alpha = .81$).

Self-esteem.

Self-esteem was measured with the Norwegian validated version of Rosenberg's self-esteem scale (RSES) (Von Soest, 2005). The scale includes ten items measuring global self-esteem. Five of the items are positively phrased and the remaining five are phrased negatively. Sample item: "I wish I had more respect for myself". The response format is from 1 (Strongly agree) to 4 (strongly disagree). Cronbach alpha for RSES was $\alpha = .87$.

Well-being.

Well-being was measured using the Norwegian version of World Health Organization five questions about well-being (WHO-5) (Bakke, 2004). The WHO-5 gives a brief assessment of emotional well-being over a 14 day period. The scale has demonstrated good

internal consistency and validity (McDowell, 2010). This five item inventory covers

participants´ general well-being. Sample item: "The last two weeks I have been happy and in

a good mood". Responses are given on a six-point rating scale from 0 (never) to 5 (all the

time). Cronbach alpha for WHO-5 in our sample was .85.

Table 1

Descriptives of the major study variables

Variable	n	M	SD	α	Range	Skew
WHO-5	139	16.81	4.27	0.85	1-25	-1.01
Obsessive passion	139	24.17	6.45	0.69	9-42	-0.01
Harmonious passion	139	33.24	5.72	0.84	17-42	-0.62
Novelty Seeking	139	29.94	7.41	0.77	14-54	0.72
Harm Avoidance	139	23.56	8.40	0.56	3-45	0.14
Reward Dependence	139	38.93	8.73	0.66	14-61	0.02
Persistence	139	36.94	7.25	0.52	20-52	-0.12
Self-Directedness	139	37.86	9.39	0.79	13-57	-0.31
Cooperativeness	139	46.97	8.19	0.63	27-67	-0.16
Self-Transcendence	139	16.27	7.24	0.81	4-37	0.51
RSES	139	19.28	4.82	0.87	8-28	-0.16

Comparison group

Available data from an ongoing mental health study among adolescents on the J-TCI

were used for comparison. This study had collected responses from 1290 participants in the

same school grades as our study with an age range from 15 to 19 years (M = 16.79, SD =

1.18).

Analysis

The data received from survey monkey was organized in Microsoft Office Excel 2007

and entered into SPSS 16.0 for the further analysis.

Skewness and kurtosis for the study variables were assessed. Values within the range

of +/- 2 for skewness and +/-7 for kurtosis are considered to be normally distributed (West,

Finch, & Curran, 1995). All of the study variables fulfilled this criterion. A significance level

of $\alpha = .05$ was set for all of the subsequent analysis.

Results

Means, standard deviations, and correlation among the variables in the study are presented in Table 2. It shows that many of the personality variables in this study are significantly inter-correlated. The reported skill level is only significantly correlated with harmonious passion ($r = 18$, $p < .05$). Harmonious passion is positively correlated with WHO-5 ($r = .42$, $p < .01$), RSES ($r = .34$, $p < .01$), Self-Directedness ($r = .38$, $p < .01$) and Persistence ($r = .37$, $p < .01$) among others. In addition is harmonious passion negatively correlated with Novelty Seeking ($r = -.23$, $p < .01$) and Harm Avoidance ($r = -.27$, $p < .01$). Obsessive passion only showed significant correlations with harmonious passion ($r = .55$, $p < .01$) and Persistence ($r = .30$, $p < .01$). Self-esteem was positively correlated with WHO-5 ($r = .63$, $p < .01$), Self-Directedness ($r = 70$, $p < .01$) and negatively correlated with Harm Avoidance ($r = -.55$, $p < .01$).

Table 2

Means, SDs and correlations for the study variables among the study group (n=139)

Variable	Mean	SD	Age	Skill	WHO-5	OP	HP	NS	HA	RD	PE	SD	CO	ST	RSES
Age	16,76	0,89	1												
Skill	7,13	1,33	-.24**	1											
WHO-5	16,81	4,27	.08	.01	1										
Obsessive passion	24,17	6,45	-.12	.13	.13	1									
Harmonious passion	33,24	5,72	-.07	.18*	.42**	.55**	1								
Novelty Seeking	29,94	7,41	.13	-.01	-.18*	-.06	-.23**	1							
Harm Avoidance	23,56	8,40	-.11	.05	-.52**	-.09	-.27**	.20**	1						
Reward Dependence	38,93	8,73	-.10	.06	.16	.07	.06	.08	-.15	1					
Persistence	36,94	7,25	-.20*	-.03	.34**	.30**	.37**	-.30**	-.51**	.22**	1				
Self-Directedness	37,86	9,39	-.03	-.06	.61**	.06	.38**	-.31**	-.75**	.16	.58**	1			
Cooperativeness	46,97	8,19	-.18	.00	.19*	.15	.23**	-.28**	-.13	.39**	.46**	.27**	1		
Self-Transcendence	16,27	7,24	-.30**	.02	-.09	.04	-.11	.26**	.35**	.25**	-.10	-.26**	.11	1	
RSES	19,28	4,82	.09	.03	.63**	-.01	.34**	-.10	-.55**	.02	.29**	.70**	-.03	-.12	1

Note. SD = Standard Deviation, WHO-5 = Well-being, OP = Obsessive passion, HP = harmonious passion, NS = Novelty Seeking, HA = Harm Avoidance, RD = Reward Dependence, PE = Persistence, SD = Self-Directedness, CO = Cooperativeness, ST = Self-Transcendence, RSES = Self-esteem, * $p < .05$, ** $p < .01$.

Gender differences

A one-way multivariate analysis of variance (MANOVA) was performed to investigate sex differences in the variables examined (Table 3). Eleven dependent variables were used: seven personality variables from the J-TCI, harmonious passion, obsessive passion, RSES and WHO-5. The independent variable was gender. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with no serious violations noted. There was a statistically significant difference between males and females on the combined dependent variables, $F(11,127) = 5.57$, $p < .001$; Wilks' Lambda = .67; partial *eta* squared = .32.

When the results for the dependent variables were considered separately, three differences reached statistical significance, using a Bonferroni adjusted alpha level of .005. Reward Dependence, $F(1, 137) = 15.72$, $p < .001$, partial *eta* squared = .10. Cooperativeness, $F(1, 137) = 17.09$, $p < .001$, partial *eta* squared = .11. RSES, $F(1, 137) = 13.33$, $p < .001$, partial *eta* squared = .09. An inspection of the mean scores indicated that females scored higher on the temperament trait Reward Dependence ($M = 41.74$, $SD = 8.40$) than males ($M = 36.16$, $SD = 8.20$). On the character trait Cooperativeness females had higher values ($M = 49.71$, $SD = 7.09$) than males ($M = 44.27$, $SD = 8.36$). Lastly females had lower values on Rosenberg's self-esteem scale ($M = 17.84$, $SD = 4.78$) than males ($M = 20.70$, $SD = 4.78$).

The significant differences in mean values between the groups were all moderate to large according to Cohen's (1977) guide to interpreting effect size. Cohen's *d* for these differences in Reward Dependence, Cooperativeness, and RSES were 0.68, 0.71, and - 0.62, respectively.

Table 3

Mean scores for male and female participants on the study variables

Variable	Female (n=69)		Male (n=70)		F	p	Cohen's d
	Mean	SD	Mean	SD			
WHO-5	16.97	3.95	16.64	4.59	0.20	.65	0.08
Harmonious Passion	17.84	4.44	20.70	4.78	0.64	.42.	-0.62
Obsessive Passion	33.42	5.31	33.06	6.12	0.14	.71	0.06
Novelty Seeking	23.72	6.22	24.60	6.67	0.50	.48	-0.14
Harm Avoidance	29.49	6.61	30.38	8.15	0.76	.38	-0.12
Reward Dependence	24.18	6.99	22.95	9.60	15.72	<.001	0.15
Persistence	41.74	8.39	36.15	8.20	1.69	.20	0.68
Self-Directedness	37.74	7.00	36.14	7.46	0.58	.45	0.22
Cooperativeness	38.25	8.85	38.46	9.91	17.09	<.001	-0.02
Self-Transcendence	49.71	7.09	44.27	8.36	1.56	.21	0.71
RSES	17.04	7.15	15.51	7.29	13.33	<.001	0.21

Differences in competition level

To investigate if athletes competing on varying levels differed in the variables investigated, a MANOVA was performed, and the results are presented in Table 4. The same eleven variables as used in gender difference testing were used as dependent variables, with competition level as an independent variable. On the combined dependent variables there was a significant difference between the different competition levels, $F(11, 125) = 1.97$, $p = .001$; Wilks' Lambda = .62; partial *eta* squared = .15. When these results were investigated separately, two differences were significant using a Bonferroni adjusted alpha level of .005. This was obsessive passion, $F(3, 135) = 5.37$, $p = .002$, partial *eta* squared = .11, and harmonious passion, $F(3, 135) = 4.63$, $p = .004$, partial *eta* squared = .09. Differences within the temperament trait Harm Avoidance was close to statistically significance with $F(3,135) = 4.14$, $p = .008$, partial *eta* squared = .08. When the mean scores from the significantly different variables were investigated, it emerged that those competing at a local level scored lower on obsessive passion ($M = 17.12$, $SD = 6.22$) than those at an international level ($M = 27.53$, $SD = 4.60$) $p = .001$. As concerns harmonious passion, those competing at a local level

reported lower scores ($M = 28.50$, $SD = 7.46$) than those competing at an international level

($M = 37.20$, $SD = 3.21$) $p = .002$.

Table 4

Means and SDs on study variables by competition level

Variables	Local (n=8)		Regional (n=34)		National (n=82)		International (n=15)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
WHO-5	15.00	3.70	15.44	4.94	17.28	4.08	18.27	3.03
RSES	17.62	5.28	17.94	4.56	19.60	4.63	21.47	5.45
Harmonious Passion	28.50	7.47	32.88	6.69	33.12	5.07	37.20	3.21
Obsessive Passion	17.13	6.22	25.18	6.99	23.82	6.03	27.53	4.60
Novelty Seeking	31.75	8.15	30.71	8.84	29.34	6.20	30.53	9.80
Harm Avoidance	26.50	6.47	25.53	8.40	23.63	8.32	17.13	7.00
Reward Dependence	42.87	13.14	39.15	8.41	39.21	8.12	34.80	9.47
Persistence	33.12	7.43	36.85	7.02	36.87	7.28	39.53	7.20
Self-Directedness	36.25	6.09	36.32	9.93	37.56	9.47	43.80	7.32
Cooperativeness	50.87	6.93	47.59	8.19	46.13	8.12	48.07	9.12
Self-Transcendence	14.62	5.12	16.76	7.41	17.06	7.39	11.73	5.48

Team sports vs. individual sports

To investigate differences between athletes competing in team sports and those

competing in individual sports, a MANOVA was conducted, and the results are presented in

Table 5. No significant differences in means between these two groups were found.

Table 5

Comparison of individual and team sport athletes on study variables

Variables	Individual (n=90)		Team (n=49)		F	p	Cohen's d
	Mean	SD	Mean	SD			
WHO-5	17.37	3.75	15.78	4.97	4.51	0.04	0.38
RSES	19.70	4.78	18.51	4.84	0.58	0.45	0.25
Harmonious Passion	33.51	5.15	32.67	6.66	1.50	0.22	0.15
Obsessive Passion	23.91	5.97	24.63	7.28	0.40	0.39	-0.11
Novelty Seeking	29.54	6.82	30.67	8.41	1.05	0.31	-0.15
Harm Avoidance	23.02	8.70	24.55	7.80	1.47	0.23	-0.18
Reward Dependence	38.27	8.62	40.14	8.87	0.07	0.79	-0.22
Persistence	37.06	7.26	36.71	7.30	0.16	0.69	0.05
Self-Directedness	38.09	9.40	37.43	9.43	3.24	0.07	0.07
Cooperativeness	46.06	8.21	48.65	7.96	0.21	0.65	-0.32
Self-Transcendence	16.07	7.11	16.65	7.51	1.95	0.17	-0.08

Athletes vs. non-athletes

To investigate if our athlete population yielded significant different mean scores on the J-TCI than non-athletes, a MANOVA was performed with J-TCI subscales as dependent variables. Results from the MANOVA are presented in Table 6. On the combined dependent variables there were significant differences between the two groups, $F (7, 1422) = 8.31$, $p <$ .001; Pillai's Trace = .04; partial *eta* squared = .04. Pillai's Trace is reported since it is more robust when there are unequal N values. Since there were seven variables used in the analysis, a Bonferroni adjusted alpha level of .007 was set. When the results were investigated separately, the following differences emerged as significant. When inspecting the mean scores for Harm Avoidance we see that the athlete population has significantly lower mean values on this temperament trait with 23.56, while the non-athlete population had a mean score of 25.82, $F (1, 1428) = 7.99$, $p = .005$, Cohen's $d = -0.25$. According to Cohen (1977) guideline for interpreting effect size, this difference in mean scores represents a small effect.

As concerns Persistence, the athletes had significantly higher scores than the non-athletes with 36.94 and 32.41, respectively, F (1, 1428) = 44.00, $p < .001$, Cohen's $d = 0.59$, reflecting a moderate to strong effect. Self-Directedness was the only character dimension of the J-TCI with significant differences in mean scores between the two groups. Athletes had higher means for this dimension ($M = 37.86$, $SD = 9.39$) than none athletes ($M = 35.50$, $SD = 9.54$), F (1, 1428) = 7.69, $p = .006$, Cohen's $d = 0.25$. This difference in mean scores represents a small effect.

Table 6

Mean scores of athlete and non-athlete on J-TCI

Variable	Athletes (n=139)		Non-athletes (n =1291)		F(1428)	p	Cohen's d
	M	SD	M	SD			
Age	16.71	0.91	16.79	1.18	0.86	.391	-0.07
Novelty Seeking	29.94	7.41	31.69	8.13	5.87	.016	0.22
Harm Avoidance	23.56	8.40	25.82	8.99	7.99	.005	-0.25
Reward Dependence	38.93	8.73	40.43	9.36	3.27	.071	-0.16
Persistence	36.94	7.25	32.41	7.68	44.00	<.001	0.59
Self-Directedness	37.86	9.39	35.50	9.54	7.69	.006	0.25
Cooperativeness	46.97	8.19	46.43	8.50	0.51	.476	0.06
Self-Transcendence	16.27	7.24	17.25	7.26	2.28	.131	-0.14

Well-being

We also wanted to investigate how the different personality dimensions, passion and self-esteem would predict level of well-being among the participants. Accordingly, we conducted a multiple regression analysis with WHO-5 as the dependent variable. Since we did not have any sound rationale for choosing predictors to be included in the model, the backward method was used to distinguish between the powerful predictors of well-being. This method was preferred since it is less likely than forward selection to exclude predictors involved in suppressor effects.

The final model included four predictors (RSES, gender, Cooperativeness and Harm Avoidance) and is presented in Table 7. The total variance explained by the model as a whole

was 49.5 %, $F(4,134) = 32.66$, $p < .001$. In the final model, only three of the control

measures were statistically significant, with RSES revealing the highest beta value (beta =

.62, $p < .001$), with sex at a lower beta value (beta = -.17, $p = .018$), and Cooperativeness with

the lowest (beta = .15, $p = .031$). Harm Avoidance was not statistically significant (beta = .14,

$p = .069$).

Table 7

Predictors of Well-being

Variable	B	SE B	B	95% CI
		Final model of Well-being		
Constant	7.13**	2.702		(1.79, 12.48)
Gender	-1.26	0.56	-.17*	(-2.43, -0,23)
Harm Avoidance	-0.07	0.04	.14	(-0.14, 0.01)
Cooperativeness	0.07	0.03	.15*	(0.01, 0.17)
RSES	0.52	0.07	.62***	(0.39, 0.65)
R²	.495			
F	32.657			

Note. N = 139. CI = confidence interval. * p < .05, *** p < .001

Self-esteem

Since self-esteem may represent an important factor for performance, we investigated

which variables contributed significantly in predicting RSES. We conducted a stepwise

regression analysis and used the backward method of entering predictors with RSES as the

dependent variables, with the same rationale as the earlier regression analysis. We entered all

the study variables into the analysis. The final model retained six of the variables and is

presented in Table 8. The variables in the final model were gender, WHO-5 (well-being),

obsessive passion, harmonious passion, Self-Directedness and Cooperativeness.

The total variance explained by the model was 69.4 %, $F(6,132) = 49.48$, $p < .001$.

All six variables in the final model were statistically significant, with Self-Directedness (beta

=.462, $p < .001$) and WHO-5 (beta = .355, $p < .001$ showing the highest beta values,

obsessive (beta = -.146, *p* = .015) and harmonious passion (beta = .188, *p* = .003) the lowest

beta values.

Table 8
Predictors of Self-esteem

Variable	Final model of Self-esteem			
	B	SE B	β	95% CI
Constant	1.51	2.14		(-2.72, 5,74)
Gender	2.16	0.51	.23***	(1.15, 3,18)
WHO-5	0.42	0.07	.36***	(0.28, 0.58)
Obsessive passion	-0.11	0.04	-.15*	(-0.20, -0.02)
Harmonious passion	0.17	0.06	.19**	(0.06, 0.29)
Self-Directedness	0.24	0.03	.46***	(0.16, 0.31)
Cooperativeness	-0.1	0.03	-.18**	(-0.17, -0.04)
R²	.694			
F	49.482			

Note. N = 139. CI = confidence interval. * p < .05, ** p < .01, *** p < .001

Discussion

We found a significant positive correlation between harmonious passion and self-esteem, which is not unexpected as harmonious passion is a measure of a flexible relation of the athletes with their chosen sport. More surprisingly we did not find a negative relationship between obsessive passion and self-esteem. Interestingly, obsessive passion, which indicates that the athlete has a compulsion to perform his/her activity even when it is not wise to do so (Mageau et al., 2009; Rip et al., 2006), is not significantly negatively correlated with self-esteem. We found the same tendency for harmonious and obsessive passion when investigating their relationship with well-being. In line with previous research (Vallerand et al., 2003), only harmonious passion is significantly correlated with well-being, and obsessive passion shows no significant relationship. We also found that harmonious passion were the only variable that had a significant relationship with athlete's subjective skill level. Since the subjective skill variable was poorly constructed, in ranging from one to ten without defining endpoints and intervals, it was difficult to interpret.

Both harmonious and obsessive passions were positively correlated with the personality trait Persistence. This is somewhat surprising since previous research has shown that only obsessive passion was related with Persistence and an autonomously regulated passion such as harmonious passion was not (Rip et al., 2006; Vallerand et al., 2003). This could be a result of a different measure of Persistence in the previous research, and that Persistence measured by the J-TCI does not entail what Mageau et. al. (2009) described as unhealthy and hazardous Persistence. On the other personality measures we did not find any significant relationship with obsessive passion, while harmonious passion was significantly correlated with five of the seven personality measures. We found harmonious passion positively associated with the important personality dimension of Self-Directedness and negatively associated with Harm Avoidance. This is understandable as low scores on Harm

Avoidance indicate a more relaxed, optimistic, vigorous and outgoing personality (Cloninger et al., 1993) which is in line with the qualities of harmonious passion and not with obsessive passion. Higher scores on the personality dimension Self-Directedness reflect a more responsible, resourceful and self-accepted personality, which should be compatible with higher harmonious passion. To our knowledge, passion has not been investigated in relation to personality traits earlier, and therefore our result facilitate the understanding of the dualistic model of passion, and help to distinguish the different qualities of the two forms of passion, where harmonious seems to be the desirable form of passion (Vallerand et al., 2008).

Harm Avoidance was negatively associated with both self-esteem and well-being. This makes sense since it is unlikely that individuals with higher levels of Harm Avoidance (reflecting a shy, pessimistic and fearful individual), would score higher on self-esteem and well-being. In accordance with previous research on both the TCI and J-TCI, Harm Avoidance was negatively correlated with the character dimension of Self-Directedness (Cloninger et al., 1993; Luby, Svrakic, McCallum, Przybeck, & Cloninger, 1999; Schmeck, Goth, Poustka, & Cloninger, 2001), which was even more pronounced in our sample. Harm Avoidance in our sample was as hypothesized, significantly negatively correlated with Persistence. This might reflect that individuals with higher scores on Harm Avoidance are less likely to be characterized as hard-working, ambitious & diligent as indicated by higher values on Persistence and on Self-Directedness characterizing purposeful, resourceful and effective individuals.

Our finding of a positive relationship between Self-Directedness, self-esteem and well-being, support previous results (Smith, Duffy, Stewart, Muir, & Blackwood, 2005). We regard this as reasonable as Self-Directedness represents one's concept of the self as an autonomous individual. Both well-being and self-esteem should be better among individuals who are described as responsible & reliable, self-accepted and resourceful. The strength of

our correlation could also indicate that Self-Directedness represents some of the same constructs as both self-esteem and well-being.

Gender differences

We found significant gender differences for self-esteem, Reward Dependence and Cooperativeness. Our results support previous research on gender differences in self-esteem (Blascovich & Tomaka, 1991; Feingold, 1994; Kling, Hyde, Showers, & Buswell, 1999), although our study found an even larger effect size disfavoring females. A gender difference in self-esteem has previously been explained by gender roles (Ruble, 1983), peer interaction (Maccoby, 1990), schools (Sadker, 1994), emphasis on physical appearance (Allgood-Merten, Lewinsohn, & Hops, 1990), violence against girls (Koss, 1990) and athletic participation (Deianey & Lee, 1995; Marsh & Kleitman, 2003). As both our male and female participants are involved in vast amounts of physical activity it is unlikely that this could explain the differences in mean scores among male and female participants. Kling et al. (1999) argued that females engage in several processes that protect their own self-esteem and therefore the effect sizes of gender differences remain small. However, our result is challenging this argument since we yielded a moderate to large effect size (Cohen, 1977).

Females had significant higher mean values than males on the temperament dimension Reward Dependence and on the character dimension: Cooperativeness, which is in line with previous research into gender differences on the adult TCI version (Pelissolo et al., 2005; Snopek, Hublova, Porubanova, & Blatny, 2011) and the Korean JTCI (Lyoo et al., 2004). Previous research has found significant lower mean values among females on Novelty Seeking compared to their male counterparts (Lyoo et al., 2004), and higher on Self-Directedness (Luby et al., 1999). However, we did not find gender differences in our sample on these personality traits. According to Luby et al. (1999), gender differences "may suggest either significant sex differences in personality development during this period of

development or alternatively significant differences in the ways girls and boys conceptualize and describe their own characteristics" (p.1136). As we stated in our hypothesis, we theorize that females have higher mean values on Reward Dependence and Cooperativeness, since these scales depict a more sentimental, warm, dependent, helpful, and compassionate personality, which may be favored by females.

Team sports vs. individual sports

Surprisingly, we did not find significant differences between team athletes and individual athletes as hypothesized. Although there were differences on the two personality dimensions we theorized, neither Reward Dependence nor Cooperativeness mean scores were significantly different between the two groups. This could be a result of our participating team-sport athletes. Those competing in team sports were more homogeneous than those competing in individual sports, since there were only two types of team sport in our sample: football and handball. In addition, all the football players came from the same school and most likely played in the same team. This was also the case for the handball players.

Athlete versus non-athletes

Our results showed that the athletes in our study obtained significantly different mean values on three of the seven personality dimensions, than a comparable non-athlete sample. It is however important to note that the comparison group might include participants competing in sports on varying levels, without attending a specific sports high school. Athletes scored higher on Persistence and Self-Directedness, and lower on Harm Avoidance. Although we expected athletes to have higher mean values on the personality dimension Persistence, we did not expect the effect size to be as substantial as it was. We view Persistence as an important aspect of an athlete's personality since this dimension is a measure of how ambitious, hard-working, industrious and perseverant you are. We theorize that our athlete group attained higher scores, than non-athlete, on this dimension since they have had to train

for longer periods of time with high quality, to be admitted to the sport specific high school they now attend. It is also likely that those individuals who score lower on Persistence would not have continued with sport participation when this takes a more organized form, both in competition and training, in the ages 12 years and upwards in Norway (Norges Idrettsforbund, 2007).

The athlete group's higher mean values on the character trait Self-Directedness seem reasonable, as higher values indicate a more mature, purposeful, resourceful and effective personality. We believe that higher scores on Self-Directedness could be important for athletes as this indicate that their habits are congruent with long term goals. Knowing that deliberate practice is a vital aspect of expert performance (Ericsson & Charness, 1994), it is reasonable to assume that individuals whose habits are in accordance with their goals would be more fitted as athletes. Even though the effect size of this mean difference is considered small, higher Self-Directedness could be viewed as beneficial for athletes.

The athletes in our study had significantly lower mean scores on the dimension Harm Avoidance. Lower scores on this temperament dimension indicate a more relaxed & optimistic, bold & confident, outgoing and vigorous personality. This seem to support earlier research which have found, with other personality measures, that athletes are more outgoing than the non-athlete population (Eysenck et al., 1982; Hirschhorn, 2006). We argue that low scores on Harm Avoidance would allow athletes to perform better in highly stressful situations such as competitions, while high scores on Harm Avoidance would in the same situations be inhibited by being too cautious and apprehensive.

Competition level

In or sample, those who competed at the international level had significantly higher levels of both harmonious and obsessive passion than those who competed at the local level. The differences in passion between local and international levels were almost 10 scale point,

which seems like a big difference. It could be that you have to have a large passion for your own activity to comply with the expected training regime for those who are competing internationally. Our results support previous research who argued that both obsessive and harmonious passion indirectly assist performance attainment (Vallerand et al., 2007). Since Vallerand et al. (2007) hypothesized that harmonious passion leads to more positive affect, it's assuring to see athletes at all competition levels have higher values of harmonious than obsessive passion. It is noteworthy that there were no other significant differences in personality traits between the competition levels in our sample. It was theorized that both Self-Directedness and Persistence would be higher, and Harm Avoidance would be lower for athletes competing at higher levels. Although these differences emerged, they did not reach statistical significance. When comparing mean values of different competition levels using MANOVA, an important assumption was broken (Pallant, 2007), as there were less cases in the group competing at the local level than dependent variables in the analysis conducted. Even so, MANOVA was preferred to ANOVA since it incorporates information about several outcome measures and has the power to detect differences along a combination of dimensions (Field, 2009).

Even though little research has supported the idea that higher self-esteem causes better performances these factors seem connected in some way. Therefore we wanted to investigate if any of our variables were successful predictors of self-esteem. Since we did not have a sound theory about what those variables could be, we conducted a stepwise regression analysis with backward selection. We found that gender, well-being, obsessive and harmonious passion, Self-Directedness and Cooperativeness accounted for almost 70 percent of the variance in self-esteem. The character dimension Self-Directedness made the strongest unique contribution in explaining self-esteem scores in our sample. As discussed earlier it is reasonable that higher scores in Self-Directedness would result in higher self-esteem, since

higher scores in Self-Directedness reflect a more self-accepting, resourceful and mature personality. Interestingly, we found that higher scores on the Cooperativeness dimension were related to lower self-esteem. This is surprising, as higher scores on this dimension indicate an empathetic, helpful and compassionate personality, which should be regarded as positive characteristic. Possibly, higher scores on this dimension could prompt individuals not to pay sufficient attention to their own individual needs and be more attentive to others, which in turn affect their self-esteem.

The view that harmonious passion is more desirable than obsessive passion (Bonneville-Roussy, Lavigne, & Vallerand, 2010; Donahue et al., 2009; Rip et al., 2006; Vallerand et al., 2003) is supported by our results of a positive relationship between harmonious passion and self-esteem on the one hand and a negative relationship between obsessive passion and self-esteem on the other hand. With an explained variance of almost 70 % one could argue that our variables might be measuring the same psychological aspects. However, we suggest that all our variables capture distinctive psychological aspects among our participants that are of scientific importance. In addition, we are not aware of previous studies that have used personality dimensions from the J-TCI as possible predictors of self-esteem.

The second regression analysis revealed significant predictors of well-being as measured by WHO-5: gender, Cooperativeness and self-esteem. Harm Avoidance did not emerge as a powerful factor in the final model which explained almost 50 percent of the total variance of well-being, with self-esteem as the variable that made the strongest unique contribution. This is expected since self-esteem could be regarded as an indicator of psychological well-being (Baumeister et al., 2003; DeNeve & Cooper, 1998). The analysis also showed that more Cooperativeness could increase well-being among our participants. Interestingly, there was the opposite (i.e. decreasing) effect on self-esteem. We argue that

Cooperativeness measures personality characteristics such as level of tolerance, empathy, helpfulness and compassion, which are useful personality traits for our participants' well-being by supporting participants in group dynamics and giving them positive feedback from peers which in turn increases the feeling of self-worth.

Limitations

The present research has some limitations. Firstly, the study relied exclusively on self-reported measures, which might compromise the reliability of our results which further might be confounded by response biases such as social desirability.

Secondly, our sample was recruited from the same non-profit private athletic school organization, although the schools were from different locations in Norway, which delimits the generalization of our results to a broader student athlete population. E.g., we cannot exclude that the participating schools have organizational guidelines for admission, teaching, training, etc. Future research should therefore include such variables in addition to demographic ones (e.g. social background).

Thirdly, our study did not have a functioning performance variable, which might have indicated which psychological characteristics affect performance and would be more desirable for athletes. Future research should include an external measure of either skill level or performance, e.g. in terms of a rating by a coach who does not have a day to day interaction with the athletes, but has a firm knowledge of the skill level needed in the actual sport.

Fourthly, this study was based on a cross-sectional exploration of personality traits, passion, self-esteem and well-being, which does not allow inferring causality from the present data. Although an attempt to find successful predictors of both self-esteem and well-being was made, these results need to be replicated to generalize the findings, preferably in a study with a longitudinal design.

Finally, a central assumption for multivariate analysis of variance (MANOVA) was broken when a comparison between different competition levels was conducted.

Conclusion

Summing up, this study has explored psychological characteristics, such as personality, passion, self-esteem and well-being among junior elite athletes. In addition, it has revealed significant differences among athletes in self-esteem, passion and personality dimensions. This is of importance as it may help coaches to individualize schedules to most optimally suit the athlete and improve performance. The obvious dedication to a sport is a phenomenon that deserves further investigation. The results from the Junior Temperament and Character Inventory (J-TCI) have shed some light on this and suggest that it could become a useful instrument in sport psychology for the assessment of personality traits among young athletes. In particular, the possible predictive power of personality for performance in different sports deserves further investigation.

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Appendix

Hei.

Mitt navn er Lars Bauger og jeg arbeider for tiden med mitt masterprosjekt i psykologi ved universitetet i Tromsø.

Jeg ønsker i den forbindelse å undersøke hva som gjør dere toppidrettselever spesielle i forhold til hvor mye tid dere bruker på idretten. Dette er en undersøkelse som ønsker å kartlegge idrettsutøvere sine følelser, interesser og ulike holdninger.

Undersøkelsen vil gå ut på å svare på påstander dere vil bli presentert. Dere svarer ved å krysse av på en skala for hvor enig/uenig dere er i påstandene. Det vil ta ca 15-20 minutter å svare på denne undersøkelsen. Les nøye igjennom spørsmålene og svaralternativene før dere svarer.

Alle svar vil være helt anonyme, og deltagelse er frivillig. De som velger å delta i undersøkelsen er med i trekningen av 2 iPod nano (8gb) musikkspillere.

For å delta i undersøkelsen: trykk på linken under, eller kopier den og lim den inn i nettleseren.

https://www.surveymonkey.com/s/R8N5LDT

Håper dette er noe dere vil delta på. På forhånd takk.

Vennlig hilsen

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Undersøkelse av idrettsutøvere

1. Spørreundersøkelse blant idrettsutøvere.

Dette er en undersøkelse som ønsker å kartlegge idrettsutøvere sine følelser, interesser og ulike holdninger. Alle svar er anonyme, og det vil ikke være mulig å finne ut hvem som har svart hva.

Les hvert utsagn og marker det utsagnet som passer best for deg. Ikke bruk for lang tid på hvert spørsmål, det finnes ingen rette eller gale svar.

Undersøkelse av idrettsutøvere

* **1. Utfyllende informasjon**

	Alder	Kjønn	Idrettstype
1.	6	6	6

* **2. På hvilket nivå konkurrer du på nå?**

Jeg konkurrerer på	6

* **3. På en skala fra 1 til 10, hvor god er du i din idrett.**

- jn 1
- jn 2
- jn 3
- jn 4
- jn 5
- jn 6
- jn 7
- jn 8
- jn 9
- jn 10

Undersøkelse av idrettsutøvere

3. Default Section

* **1. Her skal du Skrive hva slags idrett du driver med, eksempelvis langrenn, fotball, svømming etc.**

Min idrett er:

[   ]

* **2. Når du tenker på din idrett, bruk skalaen under og indiker hvor enig du er med hvert utsagn.**

	Helt uenig 1	Veldig lite enig 2	Litt enig 3	Middels enig 4	Mye enig 5	Veldig enig 6	Helt enig 7
1. Denne idretten harmonerer med de andre aktivitetene mitt liv.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n
2. Jeg har problemer med å styre min lyst til å utføre min idrett.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n
3. De nye tingene som jeg opplever med denne idretten gjør at jeg setter enda mer pris på den.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n
4. Jeg føler meg nesten besatt av denne idretten.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n
5. Denne idretten reflekterer kvaliteter jeg liker med meg selv.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n
6. Denne idretten tillater meg å oppleve en variasjon av erfaringer.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n
7. Denne idretten er den eneste tingen som får meg til å tenne.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n
8. Min idrett er godt integrert i mitt liv.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n
9. Hvis jeg kunne, ville jeg kun drevet med min idrett.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n
10. Min idrett er i harmoni med andre ting som er en del av meg.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n
11. Denne idretten er så spennende at jeg noen ganger mister kontrollen over den.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n
12 Jeg har intrykk av at min idrett kontrollerer meg.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n
13. Jeg bruker mye tid på denne idretten.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n
14. Jeg liker denne idretten.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n
15. Denne idretten er viktig for meg.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n
16. Denne idretten er en lidenskap for meg.	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n	j̇n

4. Fem spørsmål om trivsel og velvære

* **1. I de siste to ukene har jeg...**

	Hele tiden	Det meste av tiden	Mer en halve tiden	Mindre enn halve tiden	Av og til	Aldri
1. Følt meg glad og godt humør	j⌐	j⌐	j⌐	j⌐	j⌐	j⌐
2. Følt meg rolig og avslappet	j⌐	j⌐	j⌐	j⌐	j⌐	j⌐
3. Følt meg aktiv og sterk	j⌐	j⌐	j⌐	j⌐	j⌐	j⌐
4. Følt meg opplagt og uthvilt	j⌐	j⌐	j⌐	j⌐	j⌐	j⌐
5. Følt at mitt daglige liv har vært fylt av ting som interesserer meg	j⌐	j⌐	j⌐	j⌐	j⌐	j⌐

Undersøkelse av idrettsutøvere

5.

* **1. Vurder hvor enig/uenig du er med utsagnene under**

	Helt enig 1	2	3	Sterkt uenig 4
1. Jeg er stort sett fornøyd med meg selv.	jn	jn	jn	jn
2. Noen ganger synes jeg at jeg ikke er god for noen ting.	jn	jn	jn	jn
3. Jeg synes jeg har flere gode kvaliteter.	jn	jn	jn	jn
4. Jeg er i stand til å gjøre ting like godt som folk flest.	jn	jn	jn	jn
5. Jeg føler jeg har mye å være stolt av.	jn	jn	jn	jn
6. Til tider føler jeg meg ubrukelig.	jn	jn	jn	jn
7. Jeg føler jeg er en verdifull person, i det minste på samme nivå som andre	jn	jn	jn	jn
8. Jeg skulle ønske at jeg hadde mer respekt for meg selv.	jn	jn	jn	jn
9. Alt i alt er jeg tilbøyelig til å føle meg mislykket.	jn	jn	jn	jn
10. Jeg har en positiv instilling til meg selv.	jn	jn	jn	jn

6.

* **1. På den følgende siden finner du påstander som beskriver ulike holdninger, interesser og følelser. Vurder hvor enig/uenig du er i hvert utsagn.**

	Stemmer helt og holdent. 0	Stemmer i noen grad. 1	Både og. 2	Stemmer i liten grad. 3	Stemmer overhodet ikke. 4
1.Jeg forstiller meg ofte at ting er dårligere eller farligere enn det de faktisk er.	jn	jn	jn	jn	jn
2.Av og til blir jeg så oppslukt av det jeg gjør at jeg ikke legger merke til det som skjer rundt meg..	jn	jn	jn	jn	jn
3.Jeg behøver lang tid på å bli varm i trøya sammen med andre mennesker	jn	jn	jn	jn	jn
4.Hvis noen er slemme mot meg, er jeg slem tilbake.	jn	jn	jn	jn	jn
5.Jeg gjør alltid mitt beste.	jn	jn	jn	jn	jn
6.Når jeg vil ha noe, vil jeg ha det med en gang.	jn	jn	jn	jn	jn
7.Jeg blir lei meg når jeg ser at noen gråter eller har det vondt.	jn	jn	jn	jn	jn
8.Jeg sier ofte det første som ramler inn i hodet på meg.	jn	jn	jn	jn	jn
9.Jeg forstiller meg ofte at noe vil skje meg eller at jeg gjør noe feil.	jn	jn	jn	jn	jn
10.Jeg er alltid opptatt av å finne den beste løsningen på en oppgave, og ikke bare hvilken som helst.	jn	jn	jn	jn	jn
11.Jeg skulle ønske at jeg var en annen person enn den jeg er.	jn	jn	jn	jn	jn
12.Jeg tror på mirakler.	jn	jn	jn	jn	jn
13.Jeg skjønner ofte hvordan andre mennesker har det.	jn	jn	jn	jn	jn
14.Hvis jeg har gjort noe galt eller tatt feil, sier jeg unnskyld.	jn	jn	jn	jn	jn
15.Jeg tenker meg grundig om før jeg bestemmer meg for noe.	jn	jn	jn	jn	jn
16.Jeg får raskt ny energi etter å ha anstrengt meg.	jn	jn	jn	jn	jn
17.Hvis jeg må treffe nye mennesker, blir jeg veldig	jn	jn	jn	jn	jn

sjenert.					
18.Jeg føler ofte at jeg er et offer for omstendighetene.	jn	jn	jn	jn	jn
19.Jeg liker å få unna ting (gjøre pliktene mine fort) sånn at jeg får tid til å gjøre andre ting.	jn	jn	jn	jn	jn
20.Selv om jeg nettopp har blitt kjent med et menneske, forteller jeg mye om meg selv.	jn	jn	jn	jn	jn

7.

* **1. På den følgende siden finner du påstander som beskriver ulike holdninger, interesser og følelser. Vurder hvor enig/uenig du er i hvert utsagn.**

	Stemmer helt og holdent. 0	Stemmer i noen grad. 1	Både og. 2	Stemmer i liten grad. 3	Stemmer overhodet ikke. 4
21.Jeg gjør ofte ting uten å tenke om det vil fungere.	○	○	○	○	○
22.Jeg legger godt merke til hvordan andre har det.	○	○	○	○	○
23.Jeg blir nervøs hvis jeg må prøve noe nytt.	○	○	○	○	○
24.Uansett hva slags problem det er snakk om har jeg ofte gode ideer på hvordan man kan løse det.	○	○	○	○	○
25.Ofte har jeg ikke lyst å anstrenge meg for noe som helst.	○	○	○	○	○
26.Jeg blir ofte fascinert av nye ting og vil prøve de med en gang.	○	○	○	○	○
27.Jeg er ofte bekymret selv om vennene mine sier til meg at alt vil gå bra.	○	○	○	○	○
28.Jeg lærer gjerne bort det jeg kan til andre.	○	○	○	○	○
29.Jeg er ofte misfornøyd med meg selv.	○	○	○	○	○
30.Jeg liker overraskelsesfester og ting som plutselig skjer.	○	○	○	○	○
31.Jeg kan være i aktivitet hele dagen uten at jeg blir sliten.	○	○	○	○	○
32.Jeg er veldig mottagelig for hvordan andre mennesker har det.	○	○	○	○	○
33.Jeg tror på skjebnen (at noen ting i livet er forutbestemt).	○	○	○	○	○
34.Jeg liker meg selv dårlig fordi jeg har så mange feil.	○	○	○	○	○
35.Hvis jeg treffer nye mennesker, blir jeg ofte nervøs.	○	○	○	○	○
36.Selv om noen har vært kjipe mot meg, er jeg grei mot dem.	○	○	○	○	○
37.Av og til føler jeg meg nær alt og alle rundt meg, som en del av en helhet.	○	○	○	○	○
38.Hvis er noe for vanskelig	○	○	○	○	○

så gjør jeg det rett og slett ikke.					
39.Jeg reagerer sterkt på følelser hos andre mennesker selv om jeg slett ikke vil det.	jⁿ	jⁿ	jⁿ	jⁿ	jⁿ
40.For det meste gjør jeg bare det jeg virkelig må gjøre.	jⁿ	jⁿ	jⁿ	jⁿ	jⁿ

8.

* **1. På den følgende siden finner du påstander som beskriver ulike holdninger, interesser og følelser. Vurder hvor enig/uenig du er i hvert utsagn.**

	Stemmer helt og holdent. 0	Stemmer i noen grad. 1	Både og. 2	Stemmer i liten grad. 3	Stemmer overhodet ikke. 4
41.Vanligvis liker jeg ikke mennesker som har andre meninger enn meg.	jn	jn	jn	jn	jn
42.Andre mennesker har nok blitt overrasket over hvordan jeg har taklet vanskelige situasjoner.	jn	jn	jn	jn	jn
43.Jeg liker bedre å spare enn å bruke pengene mine.	jn	jn	jn	jn	jn
44.Hvis jeg må ta en viktig avgjørelse liker jeg å snakke med vennene mine eller med foreldrene mine på forhånd.	jn	jn	jn	jn	jn
45.Det er lett for meg å bli venner med noen.	jn	jn	jn	jn	jn
46.Jeg har mange dårlige vaner som jeg ville gjerne kvitte meg med.	jn	jn	jn	jn	jn
47.Jeg blir fort trøtt og jeg liker å ta en pause for å hvile meg.	jn	jn	jn	jn	jn
48.Jeg liker å løse problemene mine helt selv.	jn	jn	jn	jn	jn
49.Jeg har følelsen at jeg er på riktig vei i livet mitt.	jn	jn	jn	jn	jn
50.Andre mennesker har for mye påvirkning på meg.	jn	jn	jn	jn	jn
51.Hvis noe tar lengre tid eller er mer slitsomt enn jeg trodde gjør jeg det ofte ikke.	jn	jn	jn	jn	jn
52.Av og til overtaler andre mennesker meg til å gjøre ting jeg egentlig ikke burde gjøre.	jn	jn	jn	jn	jn
53.Jeg tror at det er en høyere kraft som forbinder alle levende vesen.	jn	jn	jn	jn	jn
54.Jeg liker å ta raske avgjørelser.	jn	jn	jn	jn	jn
55.Jeg engster meg mye hvis jeg må gjøre noe nytt (jeg får magesmerter eller får ikke sove).	jn	jn	jn	jn	jn
56.Det er lett for andre mennesker å komme innpå	jn	jn	jn	jn	jn

meg følelsesmessig.

57.Hvis jeg ikke kan noe eller ikke forstår noe, øver jeg inntil jeg kan det.	j͡ŋ	j͡ŋ	j͡ŋ	j͡ŋ	j͡ŋ
58.Ofte vet jeg ikke hva jeg ska gjøre med livet mitt.	j͡ŋ	j͡ŋ	j͡ŋ	j͡ŋ	j͡ŋ
59.Jeg hjelper gjerne til med å finne en løsning som alle kan være fornøyd med.	j͡ŋ	j͡ŋ	j͡ŋ	j͡ŋ	j͡ŋ
60.Ofte er jeg redd for nye ting som jeg ønsker å gjøre.	j͡ŋ	j͡ŋ	j͡ŋ	j͡ŋ	j͡ŋ

9.

* **1. På den følgende siden finner du påstander som beskriver ulike holdninger, interesser og følelser. Vurder hvor enig/uenig du er i hvert utsagn.**

	Stemmer helt og holdent. 0	Stemmer i noen grad. 1	Både og. 2	Stemmer i liten grad. 3	Stemmer overhodet ikke. 4
61.Jeg føler meg sjelden fri til å velge hva jeg vil gjøre.	◯	◯	◯	◯	◯
62.Det er viktig for meg at andre mennesker ikke blir påført ulemper eller skader på grunn av min atferd.	◯	◯	◯	◯	◯
63.Hvis jeg har bekymringer, liker jeg å snakke om det med en venn eller venninne.	◯	◯	◯	◯	◯
64.Av og til dagdrømmer jeg så mye at jeg stenger alt ute.	◯	◯	◯	◯	◯
65.Hvis jeg har penger bruker jeg det med en gang.	◯	◯	◯	◯	◯
66.Jeg er nesten alltid sammen med en venn eller venninne på fritiden min.	◯	◯	◯	◯	◯
67.Jeg tror at jeg gjør det rette for å oppnå mine mål i livet.	◯	◯	◯	◯	◯
68.Jeg er veldig mottagelig for følelser hos andre mennesker.	◯	◯	◯	◯	◯
69.Hvis jeg begynner med noe gir jeg meg ikke før jeg er ferdig.	◯	◯	◯	◯	◯
70.Jeg forsøker ofte å påvirke andre til min egen fordel.	◯	◯	◯	◯	◯
71.Det er likegyldig for meg om jeg er rettferdig eller forteller sannheten.	◯	◯	◯	◯	◯
72.Ofte liker jeg å gjøre nye spontane ting eller å tulle.	◯	◯	◯	◯	◯
73. Ofte forsøker jeg å sette meg inn i andre mennesker for å forstå dem ordentlig.	◯	◯	◯	◯	◯
74.Jeg liker vanskelige spill og oppgaver som krever lang tid.	◯	◯	◯	◯	◯
75.Jeg blir fort usikker hvis jeg føler meg observert.	◯	◯	◯	◯	◯
76.Hvis jeg blir nysgjerrig på noe så spiller verken	◯	◯	◯	◯	◯

farer eller forbud noen rolle for meg.

77.Jeg utsetter ofte å gjøre lekser, og gjør dem i siste liten.	jn	jn	jn	jn	jn
78.Jeg forteller helst ikke gjerne om meg selv.	jn	jn	jn	jn	jn
79.Jeg tror at en åndelig makt har hjulpet meg ved noen anledninger.	jn	jn	jn	jn	jn
80.Ofte gidder jeg simpelthen ikke å bry meg om hva andre vil.	jn	jn	jn	jn	jn

10.

* **1. På den følgende siden finner du påstander som beskriver ulike holdninger, interesser og følelser. Vurder hvor enig/uenig du er i hvert utsagn.**

	Stemmer helt og holdent. 0	Stemmer i noen grad. 1	Både og. 2	Stemmer i liten grad. 3	Stemmer overhodet ikke. 4
81.Jeg tilbyr ofte min hjelp hvis noen har vanskeligheter eller behøver noe.	jn	jn	jn	jn	jn
82.Jeg er veldig utholdende og står på også når mange andre har gitt opp.	jn	jn	jn	jn	jn
83.Jeg er svært nøye med å følge regler.	jn	jn	jn	jn	jn
84.Andre mennesker synes ofte at jeg er åndsfraværende og i min egen verden.	jn	jn	jn	jn	jn
85.Hvis jeg har et problem liker jeg ikke å la andre hjelpe meg eller overtale meg.	jn	jn	jn	jn	jn
86.Jeg holder meg alltid til sannheten selv om det kan føre til ulemper for meg.	jn	jn	jn	jn	jn
87.Jeg opptrer ofte helt annerledes enn jeg egentlig vil.	jn	jn	jn	jn	jn
88.Jeg anstrenger meg veldig og tøyer grensene mine for å oppnå målene mine.	jn	jn	jn	jn	jn
89.Det er lett for meg å gjøre en anspent situasjon harmonisk igjen.	jn	jn	jn	jn	jn
90.Jeg lar meg rask begeistre for nye ideer eller aktiviteter.	jn	jn	jn	jn	jn
91.Uventende og overraskende situasjoner gjør meg usikker.	jn	jn	jn	jn	jn
92.Hvis jeg ikke får til noe med en gang, føler jeg meg utfordret til å klare det likevel.	jn	jn	jn	jn	jn
93.Regler provoserer meg til å bryte dem.	jn	jn	jn	jn	jn
94.Jeg forteller gjerne mine venner om alt jeg har opplevd.	jn	jn	jn	jn	jn
95.Hvis jeg ser en	jn	jn	jn	jn	jn

fengslende film så lever meg så inn i rollefigurene at alle andre kan se det.					
96.Jeg har ofte krangler med andre fordi jeg vil gjøre ting på min måte.	j n	j n	j n	j n	j n
97.Jeg tror at alt liv avhenger av noe åndelig som vitenskapen ikke kan forklare.	j n	j n	j n	j n	j n
98.Hvis jeg føler meg dårlig vil jeg helst være alene.	j n	j n	j n	j n	j n
99.Jeg gjør ofte ting jeg ikke egentlig får lov til.	j n	j n	j n	j n	j n
100.Jeg liker ikke å slippe andre mennesker for nært inn på meg.	j n	j n	j n	j n	j n
101.Jeg venter helst til noen andre kommer og tar initiativet til å løse et problem.	j n	j n	j n	j n	j n
102.Jeg har ofte følelsen av at jeg er en del av en større helhet (for eksempel en del av hele menneskeheten eller naturen).	j n	j n	j n	j n	j n
103.Jeg er gjerne behjelpelig overfor andre.	j n	j n	j n	j n	j n

Undersøkelse av idrettsutøvere

11.

1. Takk for at du var med på denne undersøkelsen.

Dersom dere ønsker å være med på trekningen av iPod nano, må dere skrive e-post adressen under. Deretter blir det trukket ut 2 e-poster som vinner

2. Kommentarer til undersøkelsen og eventuelle spørsmål kan dere skrive her. Eventuelt kontakte meg på lab028@post.uit.no