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Attitudes, commitment and motivation amongst Icelandic elite athletes

VIDAR HALLDORSSON*, ASGEIR HELGASON**, and
THOROLFUR THORLINDSSON*

(**) University of Iceland*

(***) Karolinska Institutet, Sweden and Reykjavik University, Iceland*

The aim of the research was to test whether elite-level athletes differ from second-level athletes on socio-psychological measures such as commitment and motivation in relation to their success. Questionnaire data was retrieved from all Icelandic elite athletes at the time of the study (n=50), using non-elite athletes as controls (n=64). The elite athletes scored higher than the control group on all items on the Commitment Rating Scale (CRS) and on most items on The Motive to Achieve Success Scale (MASS). Women tended to score higher than men. Our findings further indicate that athletes seem to attribute their success in sport to socio-psychological attributes rather than physical and innate ones. We argue that in order to gain a more comprehensive understanding of the factors that shape athletic excellence, future studies will need to address social and psychological factors as well as biological ones.

KEY WORDS: Attitude, Elite athletes commitment, Motivation, Socio-psychological factors.

Throughout the history of sports, success in sporting competition has often been attributed to the physical characteristics of those athletes that do well. Emphases on physical fitness and specific physical skills, which are central to sports training and success, have focused on the biological and genetic base of physical fitness. Less attention has been paid to the social and so-

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Correspondence to: Vidar Halldorsson, University of Iceland, Oddi, Sæmundargata 2, 101 Reykjavik, Iceland (E-mail: vih2@hi.is)

cial-psychological aspects of success in sport. It is therefore not surprising that the dominating idea of success in sport highlights the concept of the “born” athlete and innate physical ability or talent. Researchers have hitherto mostly explained achievement in sport at the individual level, focusing on the biology of elite athletes i.e. their genes or hormones (Klissouras, Geladas & Koskolou, 2007). Previous studies have, for example, focused on the individual’s ability to harvest oxygen (VO₂max), aerobic endurance, neuromuscular performance, morphological components, motor attributes and even personality traits (Klissouras, Geladas & Koskolou, 2007). Specific attention has been given to the biological superiority of the black athlete (Entine, 2000; Hoberman, 1997) and Kenyan middle and long distance runners (Baker & Horton, 2003; Hamilton, 2000; Pitsiladis et al, 2004; Pitsiladis, et al., 2007). Although some evidence exists regarding the relationship of genetic heredity and physical attributes (Klissouras, Geladas & Koskolou, 2007), research has neither been able to identify specific sporting genes (Bale and Sang, 1996) nor a specific sporting personality (Morris, 2000; Shaw, Gorely & Corban, 2005; Starkes 2000; Weinberg & Gould, 2007) to account for sporting success. The concept of innate talent in sport is therefore insufficient because it ignores the social aspects involved. It may even be problematic, since it highlights a concept of talent that may hinder “a clear understanding of excellence” (Chambliss, 2006, p.33) and a more comprehensive approach to build success in sport.

Researchers have recently begun to shift the focus from inborn physical abilities to socio-psychological factors that influence the making of successful athletes (Brown, 2001; Carlson, 1988; Charness et al., 2006). The main argument is that talent is in part culturally produced and that the social environment plays a key role in the development of talent, interests and motivation. This approach holds that elite athletes have been nurtured to succeed in sports through commitment, hard work and an encouraging environment. Analysis of the nurture aspects of expert performers shows that they often start training at an early age and that they devote most of their lives to attaining the highest levels of performance in a highly constrained activity (Ericsson & Charness, 1994). Ericsson (1996) argues that expert performers in various domains need at least 10.000 hours of what he calls “deliberate practice” in order to succeed at the elite level. The duration and intensity of the experts training also far exceeds the training of other athletes (Ericsson & Charness 1994). Research has further shown that practice affects the biology of the human body directly (Elbert, et al., 1995; Hill & Schneider, 2006; Pantev et al., 2001). It may then seem to observers that individual talent, after years of deliberate practice, is innate. Overall commitment and practice may indeed explain much of the difference

between successful athletes and less successful ones (Abott & Collins, 2004; Chambliss, 1988; Scanlan et al., 1993; Starkes 2000). Research has also given support to the “deliberate practice” model in various activities such as chess (de Bruin, et. al., 2008), music (Lehmann & Gruber, 2006), mathematics (Butterworth, 2006) and even fishing (Thorlindsson, 1994). What motivates these expert performers to such strong commitment, to years of systematic training in a specialized activity, is perhaps the intriguing question.

Hunt (2006) argues that talents are channeled by interests. Analysis of high achievers has shown the importance of enjoyment for a given activity to reach the elite level (Chambliss; 1988; Chambliss; 2006; Kuchenbecker, 2000; Vernacchia et al., 2003). This suggests that strong intrinsic motivation is an important causal factor for the endurance and commitment necessary to succeed in a given activity. Prominent psychological theories of happiness and success such as “flow” are based on this idea of intrinsic preferences and satisfaction (Csikszentmihalyi, 2008). However, even intrinsic psychological preferences and attitudes can be shaped by extrinsic factors. In their review of studies on intrinsic motivation, Ryan and Deci note the importance of the social context in that aspect. They conclude, “social contextual conditions that support one’s feelings of competence, autonomy, and relatedness are the basis for maintaining intrinsic motivation and becoming more self-determined with respect to extrinsic motivation” (2000, p.65). The social environment may indeed play a part in shaping the interests and attitudes of individuals. However, the question of how to create and maintain the motivation necessary to stay on course for the many years of deliberate practice necessary for expert performance has not been sufficiently addressed in the literature to date (Sosniak, 2006).

In short, research on elite athletes has mainly focused on inborn biological abilities at the individual level. Various socio-psychological factors affect sporting performance but they have been left behind in the literature to date (Baker & Davids, 2007). A more comprehensive approach which includes social and social-psychological aspects would provide us with a more holistic understanding. It would also take us beyond the individual level and the often-simplistic explanations that have been the norm in analyzing elite athletes. The individual athlete is nurtured through a world of complex interactions between his physical attributes, cognitive development and the local and global social environment. The extant literature suggests that socio-psychological factors such as commitment and motivation are different for elite athletes than for second-level athletes. Ideally, attention should be paid both to nature and nurture (Starkes, Helsen & Jack, 2001). Physical talent can give individuals an advantage, but without nurture, talented individuals are not likely to reach the elite level. The prevailing emphasis on the physical as-

pects and innate talent of successful athletes has therefore left a vacuum in our search for a comprehensive understanding of elite athletes.

The aim of this paper is to help fill that vacuum and test whether Icelandic elite athletes, who have reached this desirable level, differ on socio-psychological measures relating to their success from Icelandic second-level athletes who have not advanced to the elite level. Comparing top-level athletes with athletes who have not reached the elite level would provide a test of differences in attitude in the two groups. If the elite athletes score significantly higher than the control group on the scales of commitment and motivation it could indicate that socio-psychological factors are important for individuals sporting success. If not, the opposite could be the case.

Methods

Questionnaire data was retrieved from all Icelandic elite athletes at the time of the study using non-elite Premier league athletes as controls. Iceland is geographically isolated, and so the athletes are a rather homogenous group in terms of race, class and social status. They have similar backgrounds, experiences and attitudes. This geographic isolation and social and cultural homogeneity should help us isolate the factors under study that are held to separate the elite athletes from the control group. The same geographical and social characteristics can also be considered a disadvantage when it comes to the generalizability of the study.

THE PARTICIPANTS

The elite athletes in team sports were defined as those athletes who were playing in professional leagues outside Iceland and were also members of the Icelandic national team in their sport at the time of the administration of the questionnaire. In individual sports those athletes who were on the Icelandic Olympic team for Athens 2004 (last Olympics preceding the data collection). The elite athletes represented various sports such as soccer, team handball, basketball, swimming and track & field. The second-level athletes (i.e. the control group) consisted of four established Premier league teams: three male teams (a soccer team, a handball team and a basketball team) and one female handball team. All were in the upper middle of the league table at the time of the study. The elite athletes were selected to represent only the individuals that are unquestionably considered to be elite athletes so it can be argued that the results are built on data that is nationally representative. The control group is not fully comparable with the elite group since it only contains athletes from three sports.

DATA COLLECTION METHODS

The questionnaire data collection was administered by the first author. The coaches of the athletes in both groups were contacted either by telephone or personally by the author

and asked if they agreed that their athletes participate in the study. After the coach had given consent, the athletes were invited to participate. After giving their consent, the athletes in both groups were asked to fill in the questionnaire alone and return it to the administrator in a closed envelope. The elite athletes were approached at their training facility at different times. For the control group, all team members present at the training facility at the time of the distribution of the questionnaires were invited to participate in the study. All athletes from both groups agreed to participate in the study. The questionnaire data was collected from August 2004 to May 2005.

OUTCOME MEASURES

The questionnaire consisted of 76 questions, including background questions and three scales: 1) *Motive to Achieve Success Scale* (MASS) (Willis, 1982) consisting of 17 items on a Likert Scale (Cronbachs alpha .73). 2) *Commitment Rating Scale* (CRS) (Orlick, 2000) comprising 10 items on a 1-10 digital analog scale (Cronbachs alpha .88). 3) *Elite Athlete Attitude Scale* (EAAS). The EAAS was developed by the authors for the present study and tested for face validity in a series of in-depth interviews. The EAAS comprises a list of 11 items. The respondent was asked to choose from a list of items, three items that he or she deemed the most important attributes necessary to become an elite athlete. The respondent was then asked to rate the three items in order of perceived importance using three answer alternatives for each of the selected items; “most important”, “second most important”, “third most important”.

ANALYSIS

The questionnaire data was analyzed using SPSS. The elite athletes were analyzed independently and compared with the control group. T-tests were used to test for statistical significance between the groups and to test for differences between males and females. Relative risk with 95% confidence interval was used to test for significance between the groups on individual items on the EAAS.

Results

A total of 50 Icelandic athletes met the “elite athlete” criteria at the time of data collection, 39 men (78%) and 11 women (22%). The control group consisted of 64 athletes, 46 men (72%) and 18 women (28%). Table I shows the main population characteristics of participants from both groups.

The elite athletes are older than the control group, with the mean birth year 1978 compared to 1982 for the controls (table I). The elite athletes reported to have started participating in their sport at a younger age compared with the controls, mean age for starting was 8.1 years and 9.2 years respectively.

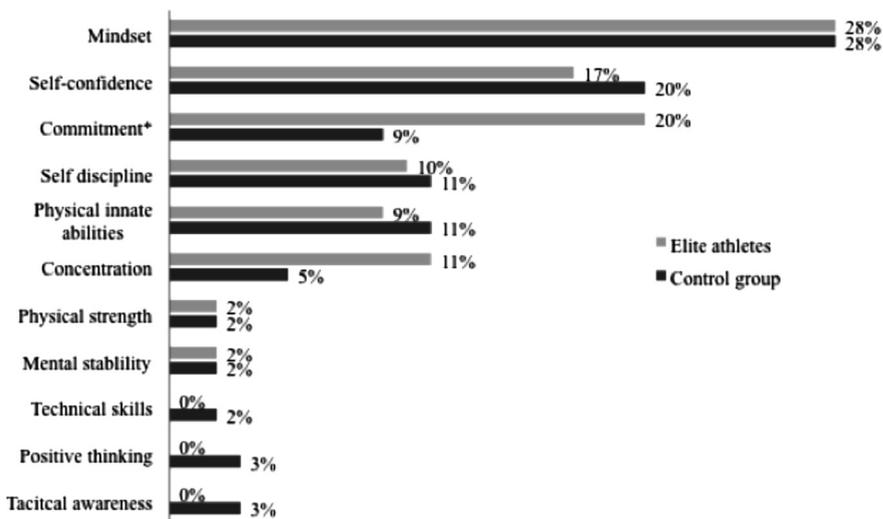
TABLE I
Population Characteristics

	Elite athletes	Control group	Total
Number	50	64	114
Male	78% (39/50)	72% (46/64)	74.6% (85/114)
Female	22% (11/50)	28% (18/64)	25.4% (29/114)
Mean birth year**	1978	1982	1980
Minimum birth year	1969	1972	1969
Maximum birth year	1986	1988	1988
Mean age of beginning sport*	8.1	9.2	8.7
Practiced other sports	80% (40/50)	87.5% (56/64)	84.2% (96/114)

*p<0.10, **p<0.05, ***p<0.01.

On the EAAS, the elite athletes and the controls appeared to have similar attitudes concerning which qualities were important for an athlete to have in order to achieve elite status in sports (figure 1). No apparent gender differences were noted (not in figure).

The athletes in both groups most frequently chose *mindset* as the number one quality for sporting success, 28% for both groups. Followed by *self-confidence*, 17% of elite athletes and 20% of the controls, and *commitment*,



*p<0.10, **p<0.05, ***p<0.01

Fig. 1. - Elite Athlete Attitude Scale (EAAS): Represents percentage of elite athletes and controls on selected different qualities that they checked as the most important quality to achieve elite status in sport.

where 20% of the elite athletes selected *commitment* and 9% of the controls. Around 10% chose *physical innate abilities* as the number one quality for sporting success, 9% of the elite athletes and 11% of the controls. However, this difference was only significant for *commitment* (at the .10 level) and the controls were on the other hand significantly more likely than the elite athletes to choose *positive thinking* as one of the three most important qualities (not in picture), the relative risk with 95% CI being 4.7 (1.4-15.5). There were few other apparent differences between the groups on the EAAS scale. In general, the results from the EAAS indicate that the athletes place socio-psychological qualities even higher than physical qualities as key factors for athletic success.

Table II shows the score of both groups on the CRS. The elite athletes scored higher than the controls on all commitment items, and in 7 out of 10 items (statements one through seven) there was a statistically significant difference between the means of the two groups (table 2). Some gender differences were apparent in the elite group on the CRS, with women scoring higher on eight out of ten items (table 2). However, the difference was statistically significant only for item three in the present analysis. Women in the control group scored higher than men on all CRS variables and the difference was statistically significant for nine out of ten items (table 2).

On the MASS, the elite athletes scored higher than the control group on most items (table 3). The difference was statistically significant for eight out of seventeen items, with the strongest correlation for the item *I try very hard to be the best*. Women tended to score higher than men on the MASS. Elite women scored significantly higher than men on two of the items (table 3) and women in the control group scored significantly higher than the men on five items (table 3).

Discussion

The findings above indicate that the athletes place more emphasis on socio-psychological factors than physical ones. They selected mindset, self-confidence and commitment rather than physical innate abilities or physical strength as the most important items for success in sport on the MAAS. The answers of the elite athletes and the control group were similar on most items, but the elite athletes were significantly more likely to choose commitment as the key factor for athletic success.

In fact, the findings strongly indicate that the elite athletes are more committed to their sport than the second-level athletes. The difference bet-

TABLE II
The Commitment Rating Scale (CRS) (1-10): Comparison On Mean Scores Between Elite Athletes And The Control Group; Males And Females In The Elite Group; And Males And Females In The Control Group.

	All athletes		Elite athletes		Control group	
	Elite athletes	Control group	Males	Females	Males	Females
1. I am willing to put aside other things to excel in my sport or chosen performance domain.	8.6***	7.5	8.5	8.9	7.3	8.3**
2. I really want to become an excellent performer in my sport or performance domain.	9.4***	8.7	9.3	9.6	8.3	9.7***
3. I prepare myself mentally for each practice and each performance so I can continue to get the best out of myself.	7.7***	6.6	7.5	8.5**	6.2	7.8***
4. I am determined to never let go or give up, even in the face of obstacles.	8.8***	8	8.7	9.2	7.7	8.8**
5. I take personal responsibility for mistakes and work hard to correct them.	9***	8.3	9.1	9	8.1	8.8*
6. I give 100 percent focus and effort in practices or preparation sessions, whether it's going well or not.	8.5***	7.8	8.5	8.5	7.6	8.3*
7. I give 100 percent focus and effort in performances or competitions, whether it's going well or not.	9.4***	8.7	9.4	9.4	8.6	9.2
8. I give everything I can, even when the challenge seems insurmountable or beyond reach.	8.8	8.4	8.8	8.7	8.2	8.9*
9. I feel more committed to improvement in my performance domain than to anything else.	8.3	7.8	8	9.1	7.6	8.5**
10. I find great joy and personal fulfillment in my performance domain.	8.8	8.3	8.7	9.2	8.1	8.9*

Marks of significant levels are placed in the box of the more committed group.
 * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

ween the two groups is highlighted in the results from the CRS, where the elite group scored higher than the control group on all items.

These results are in line with previous findings regarding the importance of commitment for athletic success (Abott & Collins, 2004; Chambliss, 1988; Scanlan et al., 1993; Starkes, 2000). The findings show that elite athletes are

TABLE III
The Motive To Achieve Success Scale (MASS) (1-17): Comparison On Mean Scores Between Elite Athletes And The Control Group; Males And Females In The Elite Group; And Males And Females In The Control Group.

	All athletes		Elite athletes		Control group	
	Elite athletes	Control group	Males	Females	Males	Females
1. Recognition from the coach makes a hard practice worth while.	3.9	4.1	3.8	4.5**	4	4.3
2. Making a 'big play' gives me a thrill.	4.9	4.8	4.9	4.8	4.7	4.9
3. I seem to play better when spectators are present.	3.9**	3.5	3.9	3.7	3.5	3.2
4. I enjoy reminiscing about my past successes in sport.	4.1	4	4	4.5*	3.9	4.2
5. Winning a game gives me great satisfaction.	5.0***	4.8	4.9	5	4.7	4.9**
6. I admire athletes who are willing to put in extra practice time to put in extra practice time to improve their skills.	4.7	4.6	4.7	4.5	4.4	4.9
7. I enjoy having people see me perform.	4.5**	4.1	4.4	4.5	4.2	4.1
8. I have a very strong desire to be successful in sports.	4.9***	4.6	4.9	5	4.5	4.9***
9. I would be willing to work all year round in order to be a success in my sport.	4.6	4.4	4.5	4.9	4.4	4.6
10. My goal is to become outstanding in some sport.	4.8***	4.4	4.8	5	4.2	4.8**
11. Being a good athlete is not important to me.	1.3**	1.7	1.3	1.3	1.8	1.6
12. I try very hard to be the best.	4.6***	3.8	4.5	4.9**	3.6	4.2***
13. I get excited just talking to someone about a game.	2	2.1	1.9	2.1	2.2	2.1
14. I work hard at my sport in the hope of gaining recognition.	4.3	4.2	4.3	4.4	4.1	4.3
15. I enjoy any assignment which others find difficult.	3.9***	3.3	3.8	4.3	3.3	3.3
16. I like to forget my sport in the off-season.	3.1	3.7	3.2	2.6	2.8	2.5
17. It is hard work rather than luck that leads to success.	4.6	4.5	4.7	4.6	4.5	4.5

Marks of significant levels are placed in the box of the more motivated group.

*p<0.10, **p<0.05, ***p<0.01

more committed to their sport and athletic career than the second-level athletes. It is worth noting that they are not only willing to give priorities to their effort to succeed in sport but they have developed a particular mindset and specific attitudes that help them make the most of daily practice. The findings show that the biggest difference in commitment between the two

groups is in the statements “I am willing to put aside other things to excel in my sport or chosen performance domain” and “I prepare myself mentally for each practice and each performance so I can continue to get the best out of myself”. More commitment to everyday training and the long-term commitment of the elite athletes could explain some of the difference of the status of the two groups. Ericsson (1996) has argued that 10 years or 10.000 hours of deliberate practice is necessary to achieve success at the elite level. Given the differences in commitment between the two groups, it is logical to assume that the elite athletes have done more in order to succeed in sports than the second-level athletes, and have therefore been more successful.

It could be argued that a high level of commitment and dedication to systematic training over the course of many years is virtually impossible without getting some kind of intrinsic satisfaction or pleasure from the activity itself. The results from the MAAS show that the elite group scores higher on most items than the control group. The elite athletes have a stronger desire to be successful in sports than the second-level athletes, and they seem to enjoy their sport more. These results are in line with the findings from other research on success in sports, where enjoyment and intrinsic pleasure from the activity have been identified as important factors in success (Kuchenbecker, 2000; Vernacchia et. al, 2003). The results from the MASS indicate that the elite group is more motivated to do their sport than the control group. It could also be argued that this extra motivation of the elite athletes provides them with the ongoing spark to sustain their commitment to years of systematic and monotonous training in more volume than the control group. When we look at an elite athlete in top form, we are struck by their skill and talent. We do not see past years of endless hours of systematic training.

The women athletes score higher than men, especially on the CRS, but also on the MASS. No gender differences were noted on the EAAS. The elite women generally score higher than elite men, and women in the control group score higher than men in the control group. Previous research indicates that female athletes are more committed (Nicholls et al., 2009) and intrinsically motivated (Chantal et al., 1996) than male athletes. These interesting findings could stem from the fact that the canals and opportunities to compete at the highest level (professionally abroad) are more accessible to male athletes than to female athletes. The female athletes are therefore less likely to reach the elite level, i.e. playing professionally abroad, and therefore to be included in the elite group, even though many of them have the same attitude as the elite men. It could also be argued that the female athletes have to be even more persistent and determined than men in order to reach the elite level, since the resources are scarce, and therefore score higher than men on

such measures. The external rewards of athletic success are also higher for men than for women. More intrinsic rewards may therefore be needed for women to reach the elite level than for men. These findings on gender differences illustrate the complex interplay between the biological, psychological and social factors that influence sporting success. At the same time, they expose the weakness of trying to understand success in sports from only one perspective. A more comprehensive approach is needed.

Since the elite athlete group contains only 50 athletes, the statistical power of the survey could be questioned. The small sample size is a problem when it comes to gender differences, since there are only 12 women in the elite athlete group. However, the proportion of female athletes is higher in the control group than in the elite group. Since the female athletes score higher than the male athletes on the CRS and the MASS, the findings probably underreport the statistical difference between the elite group and the controls. The difference between the elite and the controls would probably be greater if the percentage of women were the same in the two groups.

The elite athletes seem to have more professional attitude towards their sport than the control group. A part of the explanation is that members of the elite group are in a different situation than the control group. They are more likely to play professional sport than members in the control group. Finally, although a causal relationship between motivation and commitment was suggested, no such evidence was provided in the analysis.

Conclusion

The findings above do not provide a critical test of the nature nurture debate. They do, however, suggest that socio-psychological variables such as commitment and motivation are crucial for success in sport. Individuals' attitudes, commitment and motivations are all characteristics that are to a large degree formed, shaped and stimulated by the social surroundings (Deci & Ryan, 1985; Ryan & Deci, 2000; Weinberg & Gould, 2007). Thus, our findings demonstrate that nurturing aspects should not be excluded in future research on the making of elite athletes. It is insufficient to focus solely on biological traits at the individual level. The social, social-psychological, psychological and biological aspects are all important when it comes to achievement in sport. They are likely to interact in complex and multiple ways. Further understanding of the dynamics between these aspects will provide future athletes and generations the tools to more valuable training that could shape their behavior and attitudes, and provide the mental and social sup-

port needed for sporting success. In order to gain a more comprehensive understanding of the factors that shape athletic excellence, future studies will need to address social and psychological factors as well as biological ones.

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