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The importance of psychological characteristics in potentially talented adolescent long distance runners

ANKEBÉ KRUGER, ANITA E. PIENAAR, ELSUNET DU PLESSIS AND LOUIS JANSE VAN RENSBURG

Physical Activity, Sport and Recreation, Faculty of Health Sciences, North-West University, Potchefstroom Campus, Potchefstroom, 2520, South Africa; E-mail: ankebe.kruger@nwu.ac.za

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Abstract

Long distance running is a moderate to high-power activity supported by aerobic energy (Ward-Smith, 1999). Apart from the importance of aerobic conditioning, long distance running requires a great deal of mental toughness. The purpose of this study was to compare talented, with less talented distance runners, in order to identify the psychological characteristics exhibited by talented distance runners. A cross-sectional study design was used which consisted of 182 grade 8 pupils: 87 boys and 95 girls. Sport psychological skill levels were measured with the Athletic Copings Skills Inventory (ACSI-28). The Australian Talent Search Protocol was used to identify general sporting talent. The results of the beep test were used to identify the most talented potential distance runners. The top 30% (n=58) of the adolescents were assigned to group 1 (talented group) and the remaining adolescents to group 2 (n=107) (less talented). The results revealed that the talented group obtained significantly better results in 6 of the 8 variables which included adversity, pressure, goal-setting, concentration, coachability and the average coping ability ($p<0.05$). Moderate practical significance was found in 7 of the 8 variables which included adversity, pressure, goal-setting, concentration, confidence, coachability and coping ability, and a small practical significance was indicated for worry. It is therefore, important to consider psychological skill development in young long distance athletes to enhance their athletic performance.

Keywords: Psychological characteristics, personality, talent identification, long distance runners.

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Introduction

Talented athletes have to perform at a high level from a young age to develop a successful sporting career, indicating well-developed characteristics such as anthropometric, physiological, technical, tactical and psychological skills (Elferink-Gemser *et al*., 2004). Considerable research exist which emphasize the role of psychological factors as determinants of elite performance (MacNamara *et al*., 2010). The importance of psychological skills is further emphasized by Cox and Liu (1993) who stated that performance of athletes can be enhanced through psychological skills. According to Bois *et al.* (2009) the interaction of

cognitive anxiety, physiological arousal and self-confidence has an influence on sport performance.

Orlick and Partington (1998) identified a high level of commitment, long and short term goal- setting, imagery, focus, pre- and in-competition plans as the "success factors" that discriminate between successful and less successful athletes. In addition, Géczi *et al*. (2009) indicated that coping skills, anxiety and stress are good predictors of success in sport. More successful athletes tend to be more committed to their sport and training and they also have clear and measurable goals (Géczi *et al.*, 2009). Wilson *et al.* (2004) concludes that personal investment and satisfaction were the strongest predictors of exercise commitment, and suggest that only the *'want to'* dimension of commitment predicted greater exercise frequency. It was also reported that elite athletes were more motivated to do well in their sport, were more confident and controlled their anxiety much better (Elferink-Gemser *et al*., 2004). According to Neil *et al*. (2006) elite athletes utilize more psychological skills in order to enhance self-confidence and protect themselves against the potential debilitating effects of stressful situations during competitive events. During competitive youth sport, athletes must perform better than their peers in training and competition; therefore it is not surprising that psychological characteristics often distinguish elite from non-elite performers (Elferink-Gemser *et al*., 2004).

Kunst and Florescu (as cited in Bompa, 1994) emphasized the important role of psychological characteristics in talent development as early as 1971. They also indicated that psychological factors contributed less than 15% of talent development models at that time. Unfortunately, the current situation with regards to talent identification and development (TID) models do not seem drastically different (MacNamara, 2010). Current TID models place little if any emphasis on the role of psychological characteristics and instead implement testing protocols based almost entirely on physical and or anthropometric characteristics (Abbott & Collins, 2002; Regnier *et al*., 1993).

Long distance running is a moderate to high-power activity supported by aerobic energy (Ward-Smith, 1999). Apart from the importance of aerobic conditioning, long distance running requires a great deal of mental toughness (Thelwell & Greenlees, 2003). According to Morgan *et al*. (1988) psychological factors play an important role in distance running performance. Morgan *et al.* (1988) also reported that distance runners show a unique psychological profile, and score relatively low on measures such as anxiety and depression.

Although a substantial amount of research examined the psychological skills of elite adult athletes, by comparing successful and less successful athletes, limited research exists with regards to the sport psychological skills of talented adolescent distance runners. An assumption with regards to investigating adult

performers is that adolescents, who possess the same psychological characteristics as those of elite performers, will retain the characteristics and consequently become successful elite adult athletes (Morris, 2000).

The purpose of this study was to compare the psychological characteristics of talented and less talented distance runners. The study also emphasized the importance of inclusion of psychological factors in sport-specific TID models.

Materials and Methods

Subjects

All the grade 8 pupils (N=182; 87 boys and 95 girls) with a mean age of 13.2 years from a high School in Potchefstroom, South Africa, who consented to participate in the study, were subjected to a sport psychological and TID protocol. The results of 17 pupils were omitted because of incomplete data.

Test procedures

The testing was conducted over two consecutive days during school hours. All the pupils were informed about the purpose and nature of the research study. Informed consent forms were completed by their parents because the pupils were minors. The pupils were assured of the confidentiality of their information and that it will only be used for research purposes. The participants were informed that they had the right to withdraw from the research project at any time without providing any explanation. The questionnaires were completed in approximately 60 minutes. A sport psychology consultant was present for the entire period of questionnaire administration to answer any questions or to explain unfamiliar terminology to the pupils. After completion of the questionnaires, the subjects were subjected to the TID protocol.

Questionnaires

Demographic and general information questionnaire:
A questionnaire was used to gather the following:

Demographic information (name, surname, birth date, test date, age and race, primary school attended);

- Level of physical activity;
- Current sport participation;
- Maturity status (menarcheal age) was gathered among the girls by means of the status quo method (Yes/No).

Sport psychological skills questionnaire:

The Athletic Copings Skills Inventory (ACSI-28), developed by Smith *et al*. (1995) was used to determine the sport psychological skills profile of the group. The ACSI-28 questionnaire is divided into seven subscales and has a total of 28 items. This questionnaire determines the ability to cope with adversity, peaking under pressure, goal setting/mental preparation, concentration, freedom from worry, confidence and achievement motivation and coachability. Each of the seven subscales consists of four items measured on a 4-point Likert scale ranging from 0 (almost never) to 3 (almost always). In some cases, reverse scoring applies. The test-retest reliability of the ACSI-28 yielded a mean correlation coefficient of 0.84 (Smith *et al*., 1995).

Talent identification protocol

All the subjects (N=165) were tested by means of the Australian Talent Search Protocol. It is a standard protocol that is developed in Australia and used to identify general sporting talent. The protocol consists of 10 test items, namely body mass, stature, sitting height, arm span, basketball throwing, throwing and catching, vertical jump, 40-metre sprint, agility and aerobic endurance. The aerobic endurance was measured by the beep test where the subjects had to run back and forth on the rhythm of a prerecorded CD over a distance of 20 meters. The results of the beep test was used to identify the most talented potential distance runners, seeing that distance running is a moderate to high-power activity supported by aerobic energy (Ward-Smith, 1999). The top 30% (n=58) of the group were assigned to group 1 (talented group) and the remaining subjects were assigned to group 2 (n=107) (less talented group).

Statistical procedures

The data were analyzed using the Statistical Package of Social Sciences (SPSS 17.0 for Windows). The Statistical Consultation Service of the North-West University assisted with data analysis. Firstly, a linear regression with gender as effect modificator was used to determine if gender has an effect on the psychological skills. Secondly, the test variables for both groups (talented and less talented) are reported through descriptive statistics (means, standard deviations and minimum and maximum values). An independent-samples t-test was performed to compare the mean scores of the two groups (talented and less talented), and the level of significance was set at $p<0.05$. Lastly, practical significant difference between the two groups was determined by means of effect sizes (ES). Effect sizes were expressed as Cohen's d-value and can be interpreted as follows: an ES of more or less than 0.8 is large, an ES of more or less than 0.5 is moderate, and an ES of more or less than 0.2 is small (Thomas & Nelson, 2001).

Results and Discussion

Table 1 presents the descriptive statistics of the sport psychological skills for the talented and less talented adolescent distance runners.

The table shows that the talented group obtained significantly higher mean scores than the less talented group in 7 of the 8 sport psychological variables, namely adversity (p=0.008), pressure (p=0.002), goal setting (p=0.002), concentration (p=0.000), confidence (p=0.005), coachability (p=0.015) and average coping ability (p=0.000). Although not statistically significant, the talented group also scored better on worry than the less talented group. Furthermore, the effect sizes revealed moderately practical significant differences between the two groups for seven of the eight psychological variables, which includes adversity (d = 0.44), pressure (d = 0.52), goal setting (d = 0.52), concentration (d = 0.66), confidence (d = 0.48), coachability (d = 0.40) and average coping ability (d = 0.66), and small significant differences for only one of the eight psychological variables, namely worry (d = -0.15).

Table 1: Descriptive statistics and effect size results for talented (n=58) and less talented (n=107) adolescent distance runners

Variable	Group	N	$\overline{X}$	SD	Min	Max	p-value	d
Age	1	58	13.24	0.47	13.0	15.0		
	2	107	13.20	0.39	13.0	15.0		
	T	165	13.21	.043	13.0	15.0	0.516	-0.10
Beep	1	58	8.14	1.25	6.2	11.3		
	2	107	4.95	1.44	1.5	8.0		
	T	165	6.07	2.05	1.5	11.3	0.000*	-2.37***
Adversity	1	58	71.55	17.38	25.0	100.0		
	2	107	63.71	18.39	25.0	100.0		
	T	165	66.47	18.38	25.0	100.0	0.008*	0.44*
Pressure	1	58	63.65	24.67	0.0	100.0		
	2	107	50.78	24.40	0.0	100.0		
	T	165	55.30	25.19	0.0	100.0	0.002*	0.52**
Goal setting	1	58	63.51	20.10	25.0	100.0		
	2	107	52.41	22.28	0.0	100.0		
	T	165	56.31	22.13	0.0	100.0	0.002*	0.52**
Concentration	1	58	75.72	17.05	33.3	100.0		
	2	107	64.41	17.27	16.7	100.0		
	T	165	68.38	17.97	16.7	100.0	0.000*	0.66**
Worry	1	58	50.29	24.68	0.0	100.0		
	2	107	53.66	18.88	8.3	83.3		
	T	165	52.48	21.09	0.0	100.0	0.367	-0.15*
Confidence	1	58	80.46	16.85	33.3	100.0		
	2	107	71.89	19.10	25.0	100.0		
	T	165	74.89	18.75	25.0	100.0	0.005	0.48**
Coachablity	1	58	79.74	17.04	41.7	100.0		
	2	107	72.66	18.09	8.3	100.0		
	T	165	75.15	17.99	8.3	100.0	0.15*	0.40**
Average	1	58	69.27	11.28	50.0	91.7		
coping	2	107	61.36	12.64	26.2	92.9		
ability	T	165	64.17	12.72	26.2	92.9	0.000*	0.66**

1 = Talented group; 2 = Less talented group; T = Total group; *= Small effect size; **= Moderate effect size; ***= Large effect size; p-value < 0.05

Andrew *et al.* (2007) describes coping with adversity as the ability to stay positive, calm and in control of your emotions no matter the situation. Galli and Vealey (2008) noted that athletes see their experience of adversity as a learning phase to strengthen their coping ability for future encounters or events. Andrew *et al.* (2007) found in their study on rugby players that the talented players showed a better ability to cope with adversity than less talented players. This supports the findings of the current study which indicated that the talented athletes scored better on their ability to cope in face of adversity than the less talented athletes.

According to Otten (2009), pressure refers to different factors that increase the importance to perform better and choking as the psychological state that appears when performing under pressure. It has been suggested that acute failure of performance under pressure is due to choking (Hill *et al*., 2009). Mesagno *et al.* (2008) noted that athletes who adapt to pressure have the ability to return to a normal state faster, whereas others may respond to pressure by choking. Raglin (2007) found that coping with pressure is more pronounced in talented athletes than in less talented athletes. The importance of peaking under pressure is further highlighted by the current research findings showing that more successful athletes obtained practically significant better results with regards to peaking under pressure compared to the less successful group.

McCarthy *et al*. (2010) stated that goal-setting is a way to set specific standards for oneself, and refers to reaching a level of accomplishment in a task. It is also a way to establish positive performances and achievements. According to Thelwell and Greenlees (2003) the use of different techniques for goal-setting may enhance perceptions and feelings of control, and can improve an athlete's motivation to perform. Challenging and specific goals enhance performance faster than easy or vague goals (Lee, 1989). According to Géczi *et al.* (2009) successful athletes tend to be more committed to their sport and training and they also have clear and measurable goals. The results of this study are substantiates the findings, given that the talented athletes scored significantly better in goal-setting than the less talented athletes.

Concentration contributes to an individual's cognitive anxiety, the ability to focus on task-relevant aspects and thinking clearly in a specific attention field (Grossbard *et al.*, 2009). Taylor (1995) stated that athletes have different styles or ways to concentrate. Some athletes do not want to think about competition until it is absolutely necessary, where others have to focus and think about the upcoming competition during their preparation. According to Weissensteiner (2009) concentration skills is an attribute often found in talented athletes. Our findings confirm the above literature findings indicating that talented athletes had comprised significantly better concentration skills compared to the less talented athletes.

Although elite athletes acknowledge the strengths and weaknesses of their opponents, they do not worry about other competitors before and during a contest (Mellalieu *et al.*, 2006). The results of this study substantiate these findings as the less talented group showed more worry than the talented group.

Table 1 further shows that the talented athletes scored significantly better with regards to confidence than the less talented ones. The term self-confidence refers to one's belief that he or she can successfully execute a desired behaviour (Feltz, 1988). Feltz (1988) indicates that self-confidence plays a critical role in an athletes' success; while a lack of self-confidence seems to be closely associated with athletic failure. Thus, confidence is an important factor that distinguishes successful athletes from unsuccessful ones in terms of both their mental states as well as performances.

Many situations in sport can be perceived as challenging, threatening, or stressful, such as when playing an important game, getting media attention, injuries, poor refereeing, bad weather conditions and performance slumps (Ntoumanis & Biddle, 1998). If athletes do not have the appropriate coping skills to deal with these situations, they are likely to experience poor performance, negative affect and they may eventually drop out of sport. Therefore it can be assumed that athletes, who viewed a stressful or challenging situation as controllable are able to apply effective coping efforts (Ntoumanis & Biddle, 1998).

Coaches consider coachability as an important aspect of an individual's athletic success (Giacobbi *et al.*, 2002). The four items that assess coachability appear to reflect an athlete's reactions to feedback, advice, and criticism from coaches and managers (Giacobbi *et al.*, 2002). The importance of coachability is highlighted by the current research findings which showed that talented long distance runners scored significantly better values with regards to coachability in comparison with their less talented counterparts.

Conclusion

The aim of this study was to compare the psychological characteristics of potentially talented and less talented distance runners. When comparing the categories, i.e. talented and less talented groups, 7 of the 8 variables which included adversity, pressure, goal-setting, concentration, confidence, coachability and coping ability, differentiated the two groups significantly. Although statistically not significant, the talented group also scored better on worry than the less talented group. The talented group had better results on average in all eight variables than the less talented group.

During competitive youth sport, athletes must perform better than their peers in training and competition; therefore it is not surprising that psychological characteristics often distinguish elite from non-elite performers (Elferink-Gemser *et al*., 2004). Kunst and Florescu (as cited in Bompa, 1994) emphasized the important role of psychological characteristics in sport talent development and supports the results of this study in which the talented athletes scored significantly better than the less talented ones.

It is strongly recommended that TID models should incorporate sport psychological skills in order to identify potentially talented long distance runners and that they can be groomed to develop sport psychological skills needed to perform optimally.

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