

Impulsive athlete as a self-regulated learner. Can self-confidence and a positive social attitude change a developmental inhibitor into a growth catalyst?

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Abstract

Problem Statement: Low frustration tolerance can typically be associated with poor performance. However, in some cases, a high level of impulsivity may be an advantage (Dickman, 1990). Previous studies have shown that successful athletes outscore their non-athlete peers in self-regulation, which enables them to control their thoughts, feelings, and actions (Baumeister & Vohs, 2004; Gagné&Gulbin, 2010; Jonker et al., 2010). However, previous studies have also revealed that the most successful athletes score significantly higher in impulsivity than athletes who are less successful and possess the same skill level (Siekanska, 2013).

Purpose: The aim of this study was to determine the differences in personality profiles between successful and less-successful athletes with a high level of impulsivity.

Approach: Using a semi-structured interview and The Revised NEO Personality Inventory (NEO-PI-R), out of 128 elite athletes (from individual and team sports) who were identified as “talents” in their early career stages, 54 athletes with a high level of impulsivity were identified (31 males and 23 females; age M = 28.35). Then, they were divided into two groups: successful (n = 24) and less-successful (n = 30).

Results: The analysis of variance showed differences in the personality profiles of successful and less-successful athletes with high levels of impulsivity: both for scales ($F(4,208)=6.96$; $p<0.001$), and subscales ($F(28,1456)=3.50$; $p<0.001$) of NEO-PI-R. Successful athletes with high impulsivity (N5) had a lower overall level of neuroticism but possessed higher levels of extraversion (E), openness to experience (O), trust in others (A1), and competence (C1, $p = 0.08$) compared to less-successful athletes.

Conclusions: The obtained results indicate that successful athletes had good emotional control and were convinced of their own effectiveness even after experiencing stressful life events. The results provide information to help improve the understanding of the psychological factors that influence athletes' optimal development and to increase sport adherence by supporting an athlete's social development.

Keywords: impulsivity, elite athletes, athletes' personality, self-regulation.

Introduction

According to Costa and McCrae's concept of personality, impulsiveness (or impulsivity*) is one of the six components of neuroticism and is understood as the inability to control desires and drives (McCrae & Costa, 2005). This trait is regarded to be a symptom of numerous mental disorders (Moeller et al., 2001) and considered a significant risk factor for the development of addictions, suicide attempts, and the cause of aggressive behavior (Jakubczyk, Wojnar, 2009). Low frustration tolerance can typically be associated with poor performance and unsuccessful life (low status and wealth) (Ulrich et al., 2007). However, in some cases, high level of impulsivity may be an advantage (i.e., in situations in which the external pressure for speed or accuracy is extreme), and – after the high impulsivity is identified – the treatment designed to make the response execution faster and more accurate can be implemented (Dickman, 1988).

Therefore, high impulsivity does not have to be associated only with negative and pathological behavior (dysfunctional impulsivity), but can also be seen as functional impulsivity, which means, quick and firm decision making and use of occurring opportunities. High impulsivity does not need to be an indication for therapy, but it can be a signal that a person should develop the best behavioral strategies to balance the potential negative impact of impulsiveness (Dickman, Meyer, 1990).

The research revealed that the most successful athletes scored significantly higher in impulsiveness than athletes who are less successful and possessed the same skill level (Siekanska, 2013). On the other hand, research also has shown that successful athletes outscore their non-athlete peers on self-regulation that enables

* Authors use both terms interchangeably. However, *impulsivity* appears in literature more often than *impulsiveness* (see: Cross et al. 2011)

them to control their thoughts, feelings, and actions (Baumeister & Vohs, 2004; Gagné & Gulbin, 2010; Jonker et al., 2010).

Self-regulation refers to self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals (Zimmerman, 2002, p 14). Self-regulation refers to the process by which individuals monitor, manage, and control their behavior, thoughts, emotions and interactions with the environment, including task performance, but also including social interactions (Richard & Diefendorff, 2011). Research with athletes has shown that self-regulatory learning skills are essential for the long-term development (i.e., moving on to the next stages of a sports career up to the senior level) (Jonker et al. 2012), and the level of competence (Toering et al., 2009; Jonker et al., 2010). Self-regulatory skills (planning, monitoring, effort, self-efficacy) are predictors of an elite level of competence (at a national team level) regardless of the sports discipline. No such relationships were found among athletes performing at lower sports levels (Bartulovic, Young, Baker 2017).

Mastery (prime) performance in sport, which consists of the highest quality and repeatability and is linked to the long-term development of skills and acquiring competences, requires mastery in learning that is based on self-regulatory abilities and skills. Reflection and self-control are important “tools” of self-regulation. Reflection is one of the components of self-regulated learning. It is defined as the ability of an individual to apply previous experiences to improve subsequent outcomes in a goal-oriented and effective way (Zimmerman, 2000).

Self-control is defined as an authoritarian and repressive form or a tool of self-regulation. A self-controlled action is consistent with the goal, but not with one's own Self (one's own preferences). Self-control requires conscientious and persistent action, and continuous engagement of consciousness. The goal is achieved through the involvement of a penalty system based on the arousal of negative emotions and avoidance of any “forbidden” behaviors such as consumption of non-dietary products or stimulants (Kadzikowska-Wrzosek, 2013). People with high level of impulsiveness seem to be more susceptible to temptations, experience difficulties in controlling their needs and desires, or deferring awards, which, in the context of elite sport, may significantly worsen athletes' abilities to cope with the demands and requirements needed to achieve success at the highest level (elite level). It is therefore interesting to analyze the role of personality traits in effective self-regulation in athletes with high impulsiveness, as well as the differences between athletes who differ in terms of the level of achievement.

Materials and methods

Purpose

The aim of the study was to determine the differences in personality profiles between successful and less-successful athletes with a high level of impulsivity. It has been assumed that successful athletes will have a higher level of personality traits associated with self-regulation that allow them to modify the negative impact of impulsiveness than less-successful athletes.

Participants

128 athletes, who met inclusion criteria, were invited to the study. Two of them denied participation, and the next two agreed, but then withdrawn (car accident; family issues). Eventually, 124 athletes (70 males and 54 females; age $M=26.93$), including 40 Olympians, took part in this retrospective study (Côté, Ericsson & Law, 2005). Participants represented 23 individual and team sports (e.g. track and field, fencing, wrestling, tennis, swimming, mountain biking, figure skating, ski jumping, snowboarding, motorsports, football, handball, basketball). All of the athletes who participated in the first stage of the research:

- were adults (over 19 yrs),
- were identified as talents in a specific sports discipline in the past,
- practiced sports professionally (participation in competitions at the international level) until then or had practiced at least until 18 years of age,
- confirmed their skills by achievements, competing in their own or older age categories.

In the second stage, 54 athletes with a high level of impulsiveness were identified (31 males and 23 females; age $M=28.35$), and they were divided into two subgroups. The variable, which was the basis for distinguishing two subgroups, was the level of competence and course of development at the highest, professional level of sporting competition. The following groups were distinguished on such basis:

- (1) Successful athletes ($n=24$) - outstanding and repeated achievements (e.g. multiple medallists of the Olympic Games and world championships) or single outstanding achievements and a possibility of further development (age < 30);
- (2) Less-successful athletes ($n=30$) - competence allowing them to participate in a competition at the highest level and achievements at an earlier stage but still without achievements at senior level or despite high competence and ability to participate in a competition at the highest level, deciding to interrupt their sporting careers.

There were no statistically significant differences in the number of women and men between the subgroups ($\chi^2=1.51$; $df=1$; $p=0.218$).

Instruments

The data was collected using a semi-structured interview and the NEO-PI-R Personality Inventory which is a concise measure of the five major domains of personality (Neuroticism, Extraversion, Openness to experience, Agreeableness, Conscientiousness) as well as the six traits or facets that define each domain (N1-Anxiety, N2-Hostility, N3-Depression, N4-Self-consciousness, N5-Impulsiveness, N6-Vulnerability to Stress, E1-Warmth, E2-Gregariousness, E3-Assertiveness, E4-Activity, E5-Excitement Seeking, E6-Positive Emotion, O1-Fantasy, O2-Aesthetics, O3-Feelings, O4-Actions, O5-Ideas, O6-Values, A1-Trust, A2-Straightforwardness, A3-Altruism, A4-Compliance, A5-Modesty, A6-Tendermindedness, C1-Competence, C2-Order, C3-Dutifulness, C4-Achievement Striving, C5-Self-Discipline, C6-Deliberation).

Procedure

Names and contacts to athletes were obtained via sports institutions, universities, and schools. Potential participants were invited to the research personally. During a few-minute meeting, they were introduced to the idea of the study, and the ethical issues were explained (voluntary participation, confidentiality in data treatment, and presentation). The research was conducted individually (one-on-one) (approx. 70÷100 min per each person).

Statistical analysis

The IBM SPSS 21 program was used for statistical analyses. Basic statistics of the studied variables were calculated - means and standard deviations. General Linear Model (repeated measurement) and pairwise comparisons were used to determine intergroup differences in personality profiles. The significance level $\alpha = 0.05$ was assumed.

Results

Analyses have shown that the personality profile of highly impulsive people differs in successful athletes compared to less-successful athletes, in terms of general personality traits ($F_{4,208} = 6.96$; $p < 0.001$). Table 1 shows a detailed comparison between the two subgroups of athletes.

Table 1 Personality profile and achieving sports success - pairwise comparisons

Personality traits	Mean (sten) Less-successful	Mean (sten) Successful	SE	p	95% confidence interval for the difference	
					Low	High
N	6.30±1.90	4.62±2.08	0.54	0.003	0.59	2.76
E	6.13±1.74	7.46±1.89	0.49	0.010	-2.32	-0.33
O	5.60±1.87	7.62±1.95	0.52	<0.001	-3.07	-0.98
A	4.63±2.11	5.33±1.69	0.53	0.192	-1.76	0.36
C	5.73±1.86	6.62±1.93	0.52	0.091	-1.93	0.15

It was observed that successful athletes had a lower level of neuroticism (N) and a higher level of extraversion (E) and openness (O) than less-successful athletes (Fig 1). It can also be seen that less-successful athletes had a lower level of conscientiousness (C), but this difference did not reach statistical significance ($p = 0.091$).

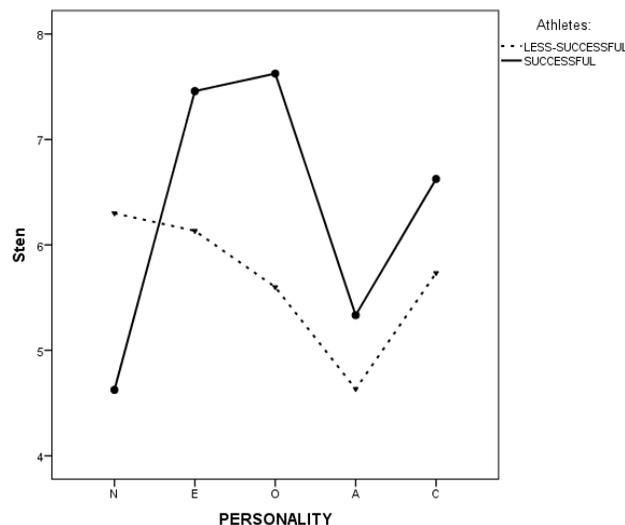


Fig 1 Personality profile and achieving sports success - general personality traits

Analyses have also shown that the personality profile of highly impulsive people differs in successful athletes compared to less-successful athletes, in terms of detailed NEO-PI-R subscales ($F_{28,1456} = 3.50$; $p < 0.001$). Detailed results are presented in Table 2.

Table 2 Detailed personality profile and achieving sports success - pairwise comparisons

Personality traits SUBSCALES	Mean (stn) Less-successful	Mean (stn) Successful	SE	p	95% confidence interval for the difference	
					Low	High
N1	5.93±1.84	4.79±2.13	0.54	0.039	0.06	2.22
N2	6.57±1.81	5.29±2.18	0.54	0.023	0.19	2.36
N3	5.77±2.06	4.46±2.00	0.56	0.023	0.19	2.43
N4	6.07±1.87	4.42±2.22	0.56	0.005	0.53	2.77
N6	5.57±1.96	3.71±1.83	0.52	0.001	0.81	2.90
E1	5.47±2.11	6.50±2.32	0.61	0.093	-2.25	0.18
E2	5.37±1.87	6.13±2.09	0.54	0.166	-1.84	0.32
E3	6.40±1.79	6.96±1.78	0.49	0.259	-1.54	0.42
E4	6.40±1.63	7.54±1.69	0.45	0.015	-2.05	-0.23
E5	6.50±1.66	6.58±2.21	0.53	0.875	-1.14	0.97
E6	6.33±2.04	7.96±1.78	0.53	0.003	-2.69	-0.57
O1	6.43±1.92	7.63±2.10	0.55	0.035	-2.29	-0.09
O2	5.03±1.87	6.46±2.45	0.59	0.019	-2.60	-0.25
O3	5.93±1.89	7.83±1.88	0.52	0.001	-2.94	-0.86
O4	5.33±2.07	6.00±1.53	0.51	0.195	-1.69	0.35
O5	5.97±2.11	7.00±1.82	0.54	0.063	-2.12	0.06
O6	6.00±1.84	7.33±2.04	0.53	0.015	-2.39	-0.27
U1	5.60±1.96	7.25±1.82	0.52	0.003	-2.69	-0.61
U2	5.23±2.03	5.46±2.30	0.59	0.704	-1.41	0.96
U3	5.07±2.48	5.75±2.21	0.65	0.296	-1.98	0.62
U4	4.53±2.05	4.63±1.97	0.55	0.869	-1.20	1.02
U5	4.97±2.24	5.17±2.28	0.62	0.747	-1.44	1.04
U6	5.30±1.90	5.29±2.01	0.53	0.988	-1.06	1.08
S1	6.50±2.21	7.46±1.59	0.54	0.080	-2.04	0.12
S2	6.23±2.22	6.50±2.02	0.59	0.650	-1.44	0.91
S3	5.80±1.95	6.42±1.69	0.51	0.227	-1.63	0.40
S4	6.90±2.44	7.63±1.86	0.60	0.235	-1.94	0.49
S5	5.60±1.96	6.33±1.76	0.51	0.159	-1.76	0.30
S6	4.40±1.98	4.63±1.81	0.52	0.668	-1.27	0.82

Analyses showed that in the study group, less-successful athletes had a higher level of all neurotic components (Fig 2). Successful athletes had higher levels of warmth (E1; $p = 0.093$), activity (E4) and positive emotion (E6), as well as fantasy (O1), aesthetics (O2), feelings (O3), ideas (O5; $p = 0.063$), values (O6) than less-successful athletes. It was also observed that less-successful athletes had lower levels of trust (A1) and competence (C1; $p = 0.080$).

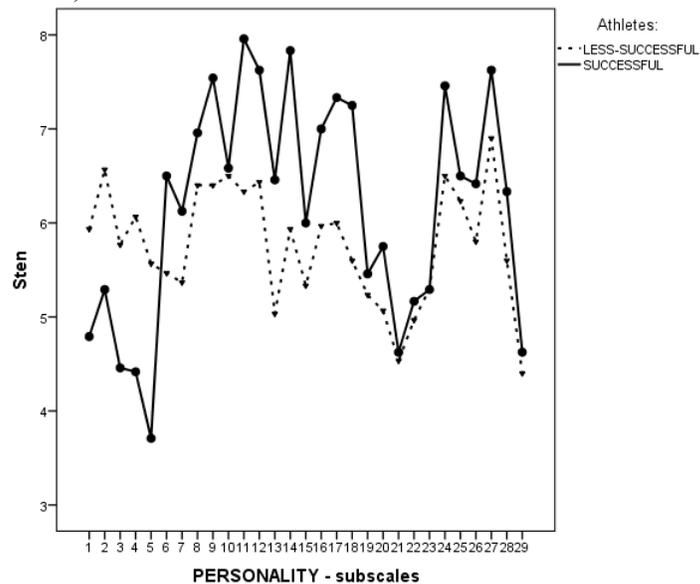


Fig 2 Personality profile and achieving sports success - detailed NEO-PI-R subscales (1:N1, 2:N2, 3:N3, 4:N4, 5:N6, 6:E1, 7:E2, 8:E3, 9:E4, 10:E5, 11:E6, 12:O1, 13: O2, 14:O3, 15:O4, 16:O5, 17:O6, 18:A1, 19:A2, 20:A3, 21:A4, 22:A5, 23:A6, 24:C1, 25:C2, 26:C3, 27:C4, 28:C5, 29:C6)

Discussion

Several differences were observed in the profiles of athletes' personalities who differed in the level of achievement. It is clear that the overall level of neuroticism was lower among successful athletes. While impulsiveness was at a high level, the other neurotic components were at average or low levels. It confirms the assumption that these individuals have more control over their emotions, which mitigates the possible negative effects of high impulsiveness. Emotional regulation is associated with expertise and expert performance in sport (Vaughan, Laborde & McConville, 2019). Greater emotional stability and resistance to distractors do not only facilitate a more effective use of coach's instructions during practice and competitions (Piedmont, Hill & Blanco, 1999) but also achieving success in sport more frequently (Steca et al., 2018).

Additionally, a low level of anxiety increases the chances of winning during a competition (Han et al., 2006). Emotional control facilitates better coping with stress and thus decreases the risk of use of unconstructive strategies, such as alcohol abuse. Research has shown that athletes are more likely to use alcohol than non-athletes (Brenner & Swanik, 2007; Mastroleo et al., 2015) and that the tendency to addiction is linked to impulsivity (Shin, Hong & Jeon, 2012).

Self-regulation to optimize performance in sport includes, inter alia, the control of undesirable behaviors and/or emotions during practice (e.g. impulsive response, anxiety). In order to compete at the highest competitive levels, an athlete should possess the ability and skills to self-regulate in two, energetically different modes: spontaneous and deliberate (Świątnicki, 2006). In the case of spontaneous self-regulation, there is an increase in engagement and intrinsic motivation (cf. Ryan & Deci's Self Determination Theory), which is associated with less energy expenditure and is perceived as a so-called "better style." Deliberate self-regulation – which does not result from feelings (positive emotions), desires, or preferences – is associated with greater effort, depletion of resources, and a decrease in motivation (cf.: Baumeister's Ego Depletion Theory). It is considered to be the so-called "weaker style." Perhaps the differences in the profiles of athletes' personalities who differ in the level of achievement are related to a specific mode of self-regulation. Athletes with higher achievements, score higher in warmth, activity, and positive emotions, which are associated with greater emotional stability, self-confidence in social contexts, energy and vigor, positive mood, and life optimism. These may favor spontaneous self-regulation and more effective use of resources (Saucier, 2008).

Research confirms that a low general level of neuroticism is associated with success in sport. However, conscientiousness is considered the second fundamental personality trait that affects sports performance, achievements, and practice (cf. Piedmont, Hill & Blanco, 1999; Steca et al., 2018). The current study has shown that in the case of athletes with a high level of impulsivity, conscientiousness modifies the likelihood of success only to a limited extent – mainly through a sense of competence. However, apparent differences were observed in relation to extraversion (E) and openness to experiences (O). These personality traits were significantly stronger in highly impulsive successful athletes than in highly impulsive athletes without major successes. Extraversion is seldom identified with success in sport – it is usually highlighted that multiple medalists are more often introverted and less socially-oriented (Coleman, 1980; Nideffer et al., 2000). However, a significantly higher level of positive emotionality can be attributed to the optimism associated with professional success in job search (Kaniel, Massey & Robinson, 2010), acquiring senior positions (Graham, Harvey & Puri, 2013), and sports success (Bleichrodt, L'Haridon & Van Ass, 2018).

Conclusions

- The research confirms that impulsivity understood as a stable personality trait, is a complex phenomenon and can be functional and beneficial in sport (e.g., quick decision making) (vide: Jakubczyk & Wojnar, 2009).
- The results indicate that successful athletes have good emotional control (vide: Yoneda et al., 2019) and are convinced of their own effectiveness, even after experiencing stressful life events.
- The results provide insights that can not only enhance the understanding of the psychological factors that influence athletes' optimal development but also increase sport adherence through supporting athletes' social development.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest

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