

Original Article

Relation between grit, competitive levels, and athletic events in Japanese athletes

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Abstract:

This study examined the relation between grit, competitive levels, and athletic events in Japanese athletes ($N = 496$, 428 men; mean age = 20.6 years, $SD = 0.6$). The results indicated that consistency of interest was marginally positively associated with competitive levels in closed-skills sports, but a negative association existed between the two in open-skills sports. In contrast, the interaction of athletic events and perseverance of effort were not significantly associated with competitive levels. These findings suggest that the combination of grit and participation in athletic events has a different relation to competitive levels.

Key Words: grit, competitive level, athletic event, Japanese athletes

Introduction

The world of sports is cruel and there are only a few athletes who can achieve success. Even if you are encouraged by the day-by-day training that abuses your body and mind, there are athletes that can succeed and athletes that cannot. In recent years, the concept of grit has drawn attention as a common factor for those who achieve lasting success. Grit has been defined as “perseverance and passion for long-term goals” (Duckworth, Peterson, Matthews, & Kelly, 2007). Duckworth and Quinn (2009) developed the Short Grit Scale that measures grit and comprises two dimensions: perseverance of effort and consistency of interest. To achieve lasting success, not only effort and tenacity but also passion and enthusiasm for the pursuit of goals are required to achieve goals that require long-term effort (Duckworth, 2016).

Grit has been found to be associated with success-related factors in various scenarios. For example, grit has been shown to be more explanatory than intelligence in academic achievement such as GPA (Duckworth et al., 2007). Moreover, after controlling for intelligence, physical aptitude, the Big Five personality traits, job tenure, high levels of grit predicted completion of a selection course of army special operations forces, graduation from high school, continuation of an employee’s work, and continuation of marriage (Eskreis-Winkler, Duckworth, Shulman, & Beal, 2014). On the contrary, few studies have been reported on athletes. In a study on elite youth male soccer players ($N = 385$), Larkin, Connor, and Williams (2016) revealed that grittier players accumulated significantly more time in sports-specific activities including competition, training, play, and indirect involvement. A study by Moles, Auerbach, and Petrie (2017), involving 71 high school adolescent soccer players, indicated that grit was a significant moderator of the feedback-shooting performance relation. However, there are few studies showing the relation between grit and sports internationally; basic research is not conducted on a wide range of athletes with only a single event type. Success for athletes entails the achievement of highly competitive results and by predicting athletes’ performance through grit, a new approach to improving performance in the future will be possible.

The present study examined the relation between grit and competitive levels in Japanese athletes. To examine the relation between psychological traits and competitive levels, Ueno, Suyama, and Oshio (2018a, 2018b) reported that it is necessary to analyze an interactive model by introducing the environment (athletic events). Previous studies indicated that depending on the type of athletic events, psychological traits may have varying impact on competitive performance (Ueno et al., 2018a, 2018b). We classify athletic events as closed-skills sports and open-skills sports (Ueno et al., 2018b) and consider whether the interaction between athletic events and grit can explain the competition levels (low-competitive level group: lower than the national level/high-competitive level group: higher than the national level) (Ueno, Shimotsukasa, Suyama, & Oshio, 2017). Taken together, we will clarify whether after controlling for sex, age, years of athletic experience, how the interaction of athletic events and grit relates to competitive levels.

Material and Methods

Participants and Procedures

A survey was conducted from January 2017, with 496 Japanese student participants (428 men; mean age = 20.6 years, $SD = 0.6$) who had enrolled in physical education universities in Tokyo. They had enrolled in a

total of 38 events, including closed-skills sports such as track and field, swimming, and gymnastics ($n = 19$, performed by 165 participants) and open-skills sports such as baseball, basketball, and football ($n = 19$, performed by 331 participants). Athletes' competitive levels were as follows: low-competitive level group ($n = 175$; lower than the national level) and high-competitive level group ($n = 321$; higher than the national level).

The survey was conducted prior to the beginning of classes conducted by this study's second author. The study followed ethical guidelines of the Declaration of Helsinki. The survey was conducted anonymously; responses were entirely voluntary, and prior to the survey, participants were provided information about the survey's purpose and about the protection of personal information. The ethics committee of the second author's institution approved the study prior to commencement.

Measures

Items on the questionnaire's face sheet included athletes' personal attributes: gender and age; athletic events in which each athlete had participated; the best results in international, national, regional, and other competitions; and years of athletic experience. Athletic grit was assessed by using the Japanese Short Grit Scale, a Japanese translation (Nishikawa, Okugami, & Amemiya, 2015) of the Short Grit Scale (Duckworth & Quinn, 2009). This scale consists of 8 items on two dimensions: perseverance of effort (e.g., "I finish whatever I begin") and consistency of interest (e.g., "I often set a goal but later choose to pursue a different one"). The scale's reliability and validity had been established previously (Nishikawa et al., 2015). In the present study, the participants responded using a 5-point Likert-type scale ranging from "Not like me at all" to "Very much like me." The scale's internal consistency using Cronbach's α was .71 in perseverance of effort and .64 in consistency of interest.

Results

HAD 16.012 (Shimizu, 2016) was used for analysis. This study conducted a hierarchical logistic regression analysis according to sex (men = 0, women = 1), age, years of athletic experience, and athletic events (closed-skills sports = 0, open-skills sports = 1) as independent variables and competitive levels (low-competitive level group = 0, high-competitive level group = 1) as a dependent variable. Sex, age, years of athletic experience, and athletic events were entered in the first step and perseverance of effort and consistency of interest in the second step. In the third step, the interaction between athletic events and perseverance of effort and athletic events and consistency of interest were entered (Table 1). The results indicated that ΔR^2 values in the third step had marginally significant interactive effects in terms of athletic events and grit. The application of the simple slope test to the interaction of athletic events and consistency of interest, which was significant, revealed that consistency of interest was marginally positively associated with competitive levels in closed-skills sports ($b = .33, \beta = .13, p < .10$). In contrast, consistency of interest was marginally negatively associated with competitive levels in open-skills sports ($b = .35, \beta = -.14, p < .10$).

Table 1 Hierarchical logistic regression analysis for competitive levels

		Odds Ratio		
		Step 1	Step 2	Step 3
Step 1	Sex	2.84 ** 95%CI [.45, 5.54]	2.87 ** 95%CI [.46, 5.63]	2.78 ** 95%CI [.40, 5.55]
	Age	1.40 † 95%CI [0.99, 1.97]	1.41 † 95%CI [1.00, 1.99]	1.43 * 95%CI [.01, 2.01]
	Years of athletic experience	1.10 ** 95%CI [.04, 1.16]	1.09 ** 95%CI [.03, 1.16]	1.09 ** 95%CI [.03, 1.15]
	Athletic events	1.63 * 95%CI [.10, 2.44]	1.65 * 95%CI [.10, 2.47]	1.60 * 95%CI [.06, 2.41]
Step 2	Perseverance of effort		.85 95%CI [0.64, 1.14]	.85 95%CI [0.63, 1.13]
	Consistency of interest		.99 95%CI [0.75, 1.32]	.99 95%CI [0.75, 1.32]
Step 3	Athletic events × Perseverance of effort			1.47 95%CI [0.80, 2.69]
	Athletic events × Consistency of interest			.49 * 95%CI [0.27, 0.88]
		R^2	.09 ***	.10 ***
		Cox-Snell R^2	.07 ***	.07 ***
		ΔR^2	.00	.01 †

Note. Sex (men = 0, women = 1), athletic events (closed-skills sports = 0, open-skills sports = 1)

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Discussion

The results of the present study indicated that perseverance of effort and consistency of interest were not significantly associated with competitive levels when controlling for sex, age, years of athletic experience, and athletic events. In a study on Japanese athletes ($N = 178$), Akiba and Tsunoda (2016) revealed that there was no significant association between grit and competitive levels. Thus, current findings confirm those of previous studies. Moreover, our analysis of the interaction of athletic events and grit revealed that only consistency of interest was marginally associated with competitive levels. These results indicated that consistency of interest was marginally positively associated with competitive levels in closed-skills sports, while a negative association between the two was observed in open-skills sports. In some of the previous studies, a positive association between grit and performance was discovered (e.g., Eskreis-Winkler et al., 2014; Duckworth et al., 2007); however, it became clear that the impact of grit on competitive levels was different depending on the athletic events involved and sub-dimensions of grit. Closed-skills sports entail competition that is conducted in a stable and predictable environment, entailing self-motivation and emotional expression (Aritomi & Toyama, 2015). On the contrary, open-skills sports involve competition that is performed in a variable and unpredictable environment and entail attention and cognition to the outside world such as opponents, team mates, game situations, and time, continuously (Aritomi & Toyama, 2015). Thus, in closed-skills sports, consistent action is required because the thought and action of the athlete lead to the competition results. In open-skills sports, thoughtfulness and behavior must change depending on opponents and circumstances, and flexible correspondence is often required. Therefore, a high consistency of interest does not necessarily have a positive influence, and grit may have a different influence depending on the athletic event. However, the numerical value of the result obtained by the present study was not high; therefore, it is necessary to pay attention to the interpretation of the results.

Several study limitations should be noted. The first is the low value of the quantity effect of the analysis results. The present study recruited athlete participants having athletic experience of many years, belonging to a physical education university, and having an overall high competition level. It would be desirable to sample a wider population of athletes engaged in sports in various forms. The second the lack of exploration of athletic events, specifically where grit is functioning. Although it is clear that grit contributes to the continuation of competitive activities, consideration of the relevance of grit to specific athletic events and their relative competitive levels is missing. The consideration of single events versus positioning is desirable. The third is our lack of analysis of the results of cross-sectional studies, which can inform the interpretation of causality. Future research should investigate the relation between grit and competitive levels longitudinally, in order to clarify whether it is possible to predict future competitive levels. In accordance with these limitations and need for further research, we expect to continue our examination of the said association.

Conclusions

The present study revealed that grit is not directly related to competitive levels, but the interaction of grit with athletic events can predict competitive levels that are likely to be achieved. The interaction of consistency of interest and participation in athletic events were found to be marginally associated, and perseverance of effort was irrelevant. In closed-skills sports, consistency of interest was positively correlated to competitive levels, whereas in open-skills sports a negative association prevailed. These findings suggest that the combination of grit and participation in athletic events has an interactive relation to the competitive levels that are likely to be achieved.

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Conflicts of Interest

The authors declare no conflicts of interest associated with this manuscript.

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