

Artículo Original

# GRIT personality and sports talent in elite taekwondo athletes

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## Resumen:

**Introducción:** Se ha demostrado que el GRIT está relacionado con el éxito en diversas áreas de la vida, incluido el rendimiento deportivo.

**Objetivo:** Determinar la relación entre la personalidad GRIT y el talento deportivo en atletas de élite de taekwondo.

**Metodología:** Se realizó un estudio cuantitativo con un diseño observacional cuasi experimental y un alcance descriptivo-correlacional con atletas de élite de taekwondo que participaron en campamentos deportivos asociados con la Organización Nacional de Taekwondo en los Estados Unidos (USAT) durante el año 2023. La personalidad GRIT se evaluó utilizando la Escala de GRIT, mientras que el talento deportivo se determinó según la posición en el ranking nacional en la USAT.

**Resultados:** Después de realizar un análisis de correlación utilizando la prueba r de Pearson, se identificaron relaciones negativas en las variables centrales ( $-0.009$ ,  $p = 0.847$ ;  $0.004$ ,  $p = 0.928$ ;  $0.011$ ,  $p = 0.809$ ); sin embargo, estas relaciones no fueron estadísticamente significativas. Los puntajes de GRIT de los atletas tuvieron una mediana de 4.00, lo que sugiere que esta población exhibe niveles altos de perseverancia según la escala GRIT.

**Conclusión:** No se encontró una relación estadísticamente significativa entre la personalidad GRIT y el talento deportivo en atletas de taekwondo. Estos resultados respaldan la noción de que la personalidad GRIT puede no ser un predictor sólido del talento deportivo. Sin embargo, no se puede descartar completamente la posibilidad de una relación entre estos dos conceptos, ya que se han encontrado evidencias que respaldan esta asociación.

**Palabras clave:** Grit, rasgos psicológicos, talento deportivo, atletas de taekwondo

## Abstract:

**Introduction:** It has been shown that GRIT is related to success in various areas of life, including sports performance.

**Objective:** To determine the relationship between GRIT personality and sports talent in elite taekwondo athletes.

**Methodology:** A quantitative study with a quasi-experimental observational design and a descriptive-correlational scope was conducted with elite taekwondo athletes participating in sports camps associated with the National Taekwondo Organization in the United States (USAT) during the year 2023. GRIT personality was assessed using the Grit Scale, while sports talent was determined based on the national ranking position in the USAT.

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**Results:** After conducting correlation analysis using Pearson's  $r$  test, negative relationships were identified in the core variables ( $-0.009$ ,  $p=0.847$ ;  $0.004$ ,  $p=0.928$ ;  $0.011$ ,  $p=0.809$ ); however, these relationships were not statistically significant. The athletes' GRIT scores had a median of 4.00, suggesting that this population exhibits high levels of perseverance according to the GRIT scale.

**Conclusion:** No statistically significant relationship was found between GRIT personality and sports talent in taekwondo athletes. These results support the notion that GRIT personality may not be a strong predictor of sports talent. However, the possibility of a relationship between these two concepts cannot be completely ruled out, as evidence supporting this association has been found.

**Keywords:** Grit, psychological traits, sports talent, taekwondo athletes.

## 1. Introduction

The significance of psychological traits in sports talent is a relevant topic in scientific research and sports practice. Psychological traits such as motivation, determination, perseverance, and passion play a crucial role in sports performance and the achievement of athletic goals (1, 2, 3, 4). These traits can be developed and strengthened through psychological interventions and mental training, assisting athletes in reaching their maximum potential (5).

One psychological trait that has gained attention across various research fields, including psychology, education, and sports, is GRIT or simply, GRIT personality (6, 7). Angela Duckworth and Christopher Peterson (2007) defined GRIT as "the ability to maintain passion and perseverance over the long term, especially in the pursuit of challenging goals" (p. 1087). GRIT has been shown to be related to success in various life domains, including academic performance, professional achievement, and sports performance (1, 5).

The measurement of GRIT has primarily been carried out through the Grit Scale questionnaire developed by Duckworth and Peterson (2007). This questionnaire consists of two subscales: consistency of interest and perseverance. Consistency of interest refers to the ability to maintain focus and passion for long-term goals, while perseverance relates to the ability to overcome obstacles and sustain effort even in adversity. The Grit Scale questionnaire has demonstrated good internal consistency and construct validity across different populations and cultures (6, 8). The importance of GRIT personality lies in its capacity to predict long-term success. As noted by Duckworth and Peterson (2007), GRIT is more than just having talent or innate ability; it involves constant commitment and determination to overcome challenges. By developing and cultivating GRIT, individuals can enhance their ability to persevere and achieve meaningful goals in various aspects of their lives (1, 5, 9).

Studying these psychological characteristics has been crucial in improving sports performance and talent, with the latter being the focus of research and interest for decades. Numerous studies aim to understand the factors contributing to success in the sports grit (1, 2, 3, 6, 7). Recently, attention has been given to the importance of GRIT as a crucial factor in the development and performance of athletes. Various studies have found a positive relationship between GRIT and sports talent. Research conducted on young athletes has demonstrated that those with higher levels of GRIT perform better and have a greater likelihood of success in sports (10, 11).

GRIT is closely related to persistence and resilience, essential characteristics for facing sports challenges. A study with elite tennis players found that those with higher levels of GRIT exhibited greater ability to recover from injuries and overcome obstacles, contributing to their long-term success (12). The development of GRIT in young athletes can be promoted through appropriate interventions. A study with adolescent swimmers showed that a psychological training program

focused on GRIT development resulted in significant improvements in perseverance and sports performance (13). Consequently, the main hypothesis of this research aims to identify whether there is a relationship between GRIT and sports talent, inferring that higher levels of GRIT are associated with greater sports talent or if these two constructs do not maintain a strong relationship in these populations.

Low determination and perseverance, or in other words, low levels of GRIT, have been identified to have a negative impact on sports performance. Lack of determination can lead to decreased motivation and commitment, affecting the dedication and effort an athlete is willing to invest in their training and competition. For example, a study by Stambulova, Alfermann, and Statler (2009) found that lack of determination was associated with lower persistence in young athletes, which, in turn, was related to lower long-term sports performance (14).

Lack of perseverance can also be detrimental to sports performance. Athletes who lack the ability to overcome obstacles and stay focused on their goals may be more prone to giving up or easily surrendering in challenging situations. According to a study by Robazza, Pellizzari, and Hanin (2004), lack of perseverance was associated with lower performance and a reduced ability to cope with stress in high-level athletes. (15) Furthermore, determination and perseverance are fundamental characteristics for skill development and achieving long-term goals in sports. According to Baumeister, Gailliot, DeWall, and Oaten (2006), perseverance and self-discipline are important predictors of success in various life domains, including sports. The ability to persevere through challenges and maintain focus in training and competition is crucial for reaching maximum sports potential (16).

Low determination and perseverance negatively impact sports performance. These traits are associated with decreased motivation, lower persistence, and a higher likelihood of giving up in challenging situations. To achieve success in sports, it is crucial to develop and cultivate determination and perseverance, as they are important predictors of long-term sports performance. Therefore, the aim of this study was to determine the relationship between GRIT personality and sports talent in elite taekwondo athletes.

## **2. Methodology**

### **Design**

This study employed a quantitative approach, utilizing a quasi-experimental observational design with a descriptive-correlational scope. The research was conducted among elite Taekwondo athletes participating in sports camps associated with the United States Taekwondo organization (USAT) during the year 2023.

### **Population and Sample**

The sample consisted of (n=470) participants from various categories, selected through convenience sampling by the researchers using a non-probabilistic sampling method. Inclusion criteria required participants to be volunteers, affiliated with USA Taekwondo (USAT), and have completed all stages of the study. Additionally, informed consent and assent were obtained from underage athletes through appropriate signatures.

### **Measurement Instruments**

The Grit Scale questionnaire, developed by Angela Duckworth and Christopher Peterson in 2007, was used to assess the GRIT personality trait in athletes in this research (5). The Grit Scale is a self-administered questionnaire comprising two subscales: consistency of interest (interest and perseverance for long-term goals) and perseverance (persistence and

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determination despite obstacles) (5). It consists of 12 items, each with a 5-point Likert scale response ranging from 1 (not at all like me) to 5 (very much like me). Example items include "I commit to long-term goals" and "I like to have a set of goals to work toward" (5). The Grit Scale questionnaire has demonstrated good internal consistency and construct validity, with consistent results across different populations and cultures (6, 8). Moreover, it has been employed in various research studies across different fields such as education, sports, and health (6, 17).

For the sports talent variable, the position in the national ranking of USA Taekwondo (USAT) by category was considered, meaning that the closer a taekwondo athlete is to the top positions in the ranking, the higher their sports talent.

**Procedure**

To obtain the necessary data, formal permission was sought through letters addressed to the directors of Taekwondo camps. Once authorization was obtained, all participants were called to an informational meeting where the study's purposes, procedures, and expected results were explained. Participants were provided with a consent and assent form for their signature. Basic sociodemographic data, such as age, gender, and category, were collected. Finally, evaluations of the main variables of interest in this research were conducted.

Measurements were taken in the morning during each Taekwondo camp, specifically during the preparatory period when athletes were not in the competition stage. This timing is crucial as self-reported data can be influenced by the moment of evaluation. For sports talent evaluation, the latest results from the USAT national ranking provided by each affiliated coach were obtained. Additionally, for GRIT personality measurement, the questionnaire was handed out to each taekwondo athlete for completion, addressing any questions or concerns during the process. It was ensured that each participant answered all questions thoroughly, and the data were subsequently entered into a database with the obtained information.

**Ethical Considerations**

Throughout the study, respect for rights protected by the 2013 Helsinki Declaration was guaranteed. (18) Participants were provided with comprehensive information about the study's purpose, procedures involved, the voluntary nature of their participation, and the confidentiality of their data. These aspects were formalized through the signing of informed consent. To preserve participant privacy, codes were assigned to their data in the database instead of using their real names.

**Statistical Analysis**

For data analysis, all information was entered into an Excel spreadsheet and transferred to the statistical software SPSS Version 25. Categorical variables were described in terms of percentages and frequencies. To check for normality of data (for samples >50), the Kolmogorov-Smirnov test was applied. In the case of continuous variables with non-normal distribution, they were reported as median and interquartile range, while normally distributed variables were reported as mean and standard deviation. Spearman rho correlation test was used to assess the relationship between variables, with a two-tailed significance level set at  $p \leq 0.05$ .

### 3. Results

In Table 1, the sociodemographic characteristics of the population can be observed. It was identified that the sample of American taekwondo athletes was heterogeneous with respect to categories and gender. Most athletes were around 15 years old.

**Table 1.** Sociodemographic Characteristics of the Population.

Characteristics	N	%
<b>Athletes' Gender</b>		
Male	265	56.38
Female	205	43.62
Total	470	100
<b>Athletes' Category</b>		
Cadet	153	32.55
Junior	149	31.7
Senior	168	35.74
Total	470	100
	M	SD
<b>Age of Athletes</b>	15.28	±3.75

**Note:** M = mean; SD = standard deviation

According to the results presented in both Table 2 and Figure 1, it can be identified that the fundamental variables of this study exhibited a non-normal distribution, as their significance was  $p < 0.005$ . Therefore, the null hypothesis (H0) is rejected, and the alternative hypothesis (H1) is accepted.

**Table 2.** Kolmogorov-Smirnov Test for Fundamental Variables

Characteristics	N	Test Statistic	Significance
Sport talent	470	0,203	0,000
Total Grit	470	0,063	0,000
Grit Consciousness Interest	470	0,099	0,000
Grit Perseverance Effort	470	0,100	0,000

Regarding the findings obtained in the measures of central tendency and dispersion expressed in Table 3, it was identified that the majority of athletes exhibit high sports talent (close to position 1 in the national ranking of USAT), corresponding to a Mean: 8.0, P25=4.00, P75=18.00. The athletes' grit scored a median of 4.00, suggesting that this population has high values of perseverance according to the grit scale. Likewise, this population stood out for having high perseverance in effort.

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**Table 3.** Measures of Central Tendency and Dispersion of Fundamental Variables

Characteristics	N	M	SD	ME	IQR
Sport talent	470	14,0	± 15,85	8,00	P25 = 4,00 P75 = 18,00
Total Grit	470	3,96	± 0,49	4,00	P25 = 3,60 P75 = 4,30
Grit Consciousness Interest	470	3,82	± 0,69	3,80	P25 = 3,40 P75 = 4,40
Grit Perseverance Effort	470	4,10	± 0,52	4,20	P25 = 3,80 P75 = 4,40

**Note:** M = mean; ME = median; SD = standard deviation; IQR = interquartile range; P25 = 25<sup>th</sup> percentile; P75 = 75<sup>th</sup> percentile.

After the correlation analysis with Spearman's rho test, as shown in Table 4, negative relationships were identified in the fundamental variables (it is necessary to remember that, as the athlete approached the first position in the ranking, his or her sporting talent increased). Therefore, this negative relationship is interpreted as follows: greater sporting talent corresponds to higher scores on the GRIT scale and subscales; however, these relationships were not statistically significant and, at the same time, were weak negative relationships.

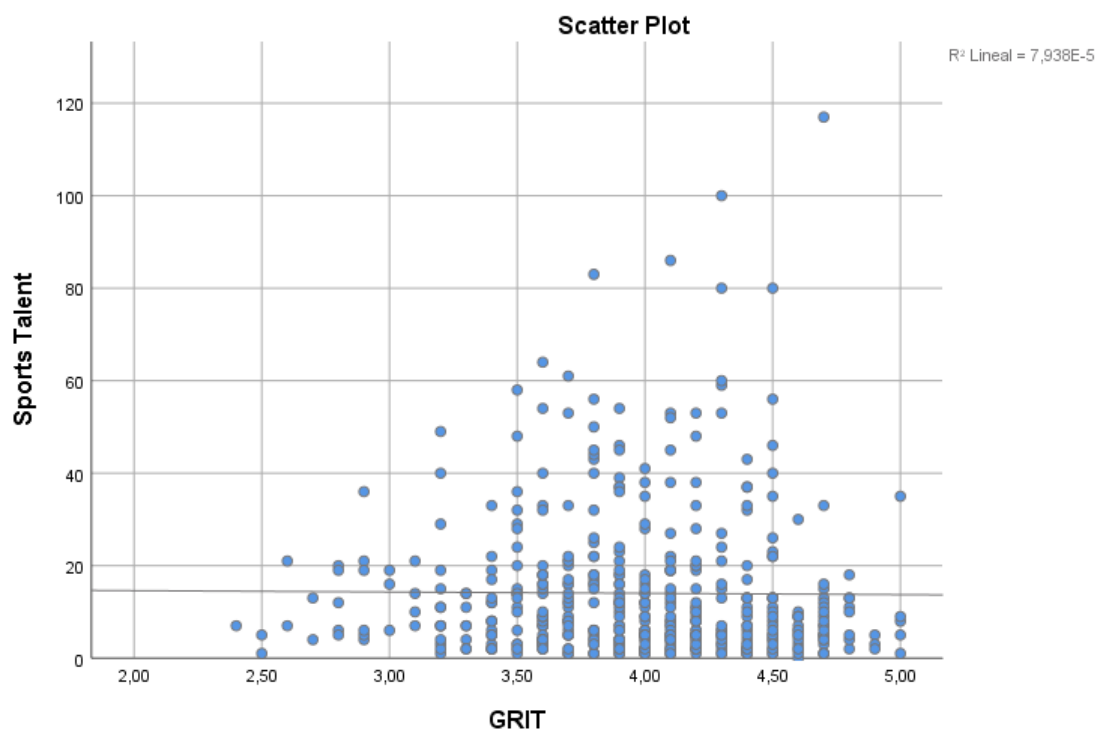
**Table 4.** Spearman Correlation between the Variables of Interest

Characteristics	Sport Talent	
	Rho Spearman Test	P value
Total Grit	-0,009	0,847
Grit Consciousness Interest	-0,004	0,928
Grit Perseverance Effort	-0,011	0,809

In Figure 1, 2 and 3 the behaviors of the fundamental variables in the scatter plot scheme can be observed. It can be identified that higher rankings (indicating higher sports talent) are located in scores between 3.0 and 4.5 on the grit scale. This suggests that with a higher score in the national ranking of USAT, there is a higher score on the grit scale.

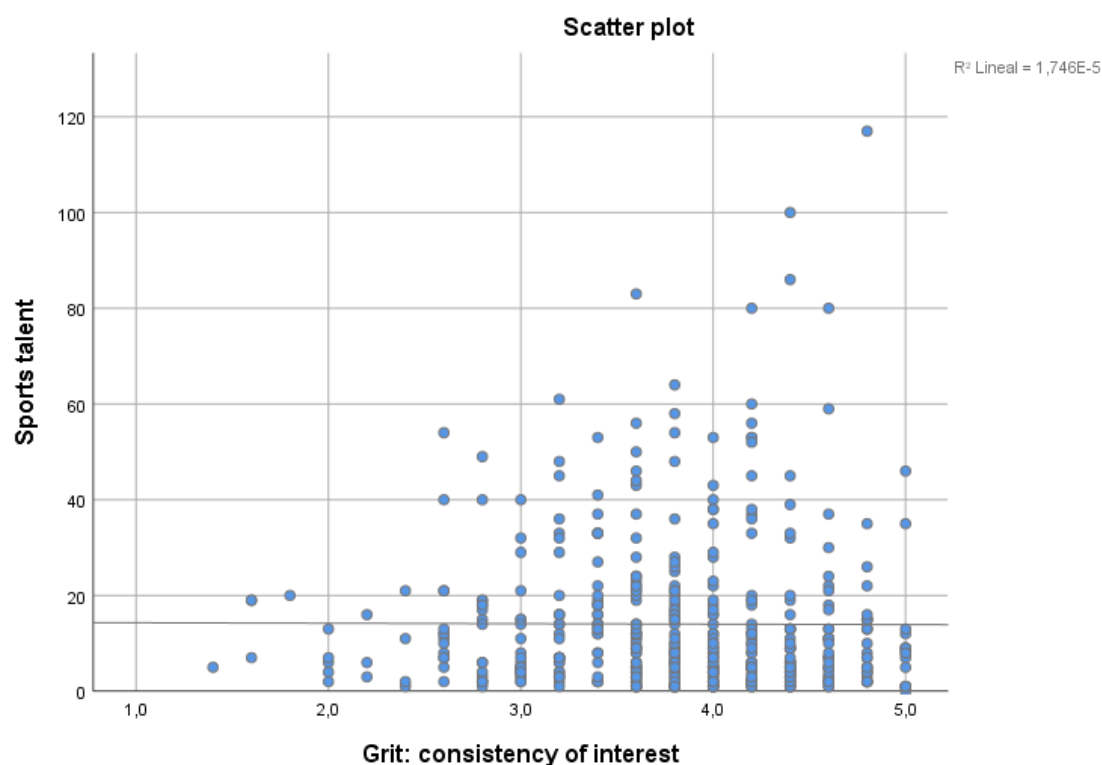
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**Figure 1.** Scatter plot of grit and sports talent.



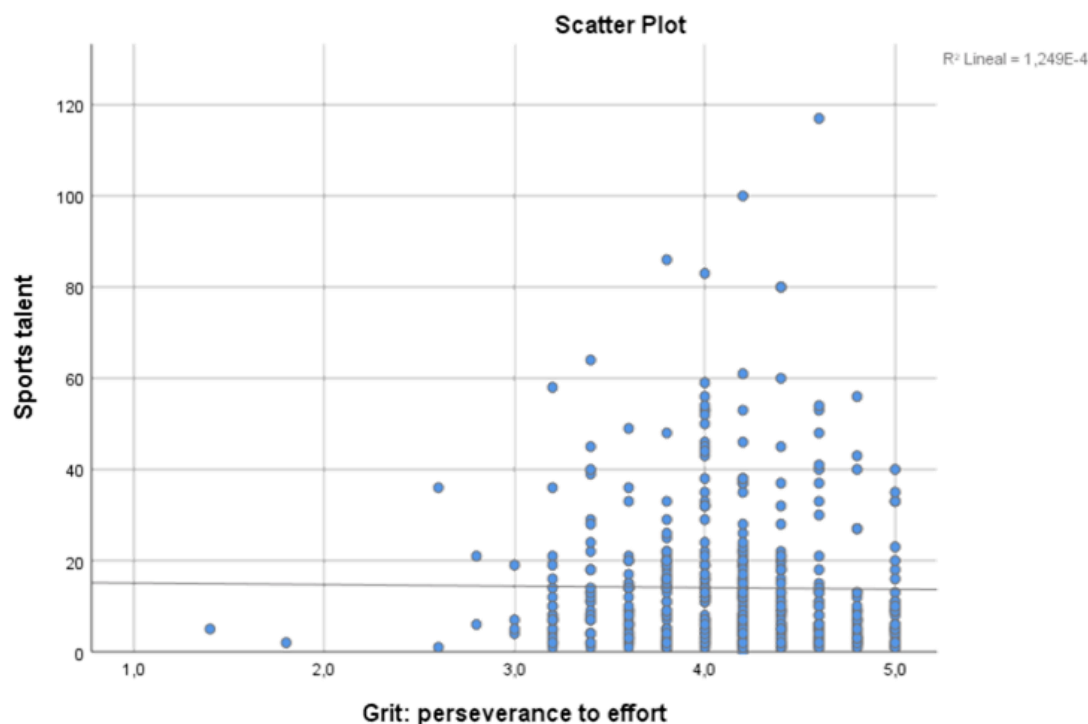
Note:  $R^2 \text{ Lineal} = 7,938E-5$

**Figure 2.** Scatter plot of grit: consistency of interest and sports talent.



Note:  $R^2 \text{ Lineal} = 1,746E-5$



**Figure 3.** Scatter plot of grit: perseverance to effort and sports talent.

Note:  $R^2$  Lineal = 1,249E-4

#### 4. Discussion

The aim of this research was to determine if there is a relationship between GRIT personality and sports talent in elite taekwondo athletes. According to the findings, it was indicated that there is no statistically significant relationship between sports talent and the grit scale, as well as its respective subscales. This is supported by research that has evaluated "grit" personality and its relationship with sports performance, with results showing no association between these variables. For example, a study conducted on Japanese athletes found no significant relationship between "grit" personality and competitive performance, regardless of gender, age, years of athletic experience, and sports events (19). Furthermore, another study with a sample of (N=178) athletes revealed no significant association between "grit" and sports performance (20).

Additionally, "grit" personality is defined as long-term perseverance and passion for goals. It has often been suggested that this personality is a key predictor of sports talent and success. However, some studies have found contradictory results regarding the association between grit and sports talent. For instance, a study by Macnamara, Moreau, and Hambrick (2016) examined the relationship between grit and talent in a sample of young athletes. The results showed that grit was not significantly associated with sports performance or talent ranking in individual and team sports (21).

A meta-analysis by Li et al. (2019) investigated the relationship between "grit" and academic, sports, and work performance. The results revealed that while "grit" was modestly related to academic and work performance, no significant relationship was found between "grit" and sports performance (22). These findings support the idea that "grit" personality may not be a robust predictor of sports talent. However, the possibility of an association between these two constructs is not ruled out, as there is evidence supporting such a connection (1, 23, 24).



It is essential to consider that sports talent involves a combination of factors, including not only perseverance and passion but also technical skills, physical fitness, and learning ability. A study by Lombardo and Deaner (2019) found that physical fitness and technical skills were stronger predictors of sports performance than grit. These findings support the idea that sports talent is multifaceted and cannot be solely attributed to "grit" personality (25).

In this regard, while "grit" personality has been suggested to be related to sports talent, studies have found inconsistent results in this association. While some studies have not found a significant relationship between grit and sports talent, others have emphasized the importance of factors such as physical fitness and technical skills in sports performance. Therefore, it is necessary to consider multiple aspects when evaluating sports talent and not rely solely on "grit" personality.

Regarding the scores on the grit scale, high scores were found in grit overall, as well as in its two subscales in this population. These results are similar to other interventions conducted in elite taekwondo athletes. For example, a previous study by Laurin, Saez et al. (2021) reported Grit scores in men as  $3.96 \pm 0.51$  and in women as  $3.89 \pm 0.39$ , which aligns with our study. (26) Similarly, our results are consistent with other sports, such as an intervention in elite football players who obtained an average score between 3.78 and 3.99 (27). This similarity may be due to the fact that both populations are athletes and are in competitive age groups. On the other hand, our findings are higher than those obtained in university students, where average scores were 3.6 ( $\pm 0.5$ ) for men and 3.7 ( $\pm 0.5$ ) for women (28). These differences in results could be attributed to one of the compared populations not consisting of athletes, while the other did. In fact, scientific literature has consistently shown that passion plays an important role in sports performance (1, 27, 28).

## 5. Limitations and Strengths

One of the main limitations of this study lies in its descriptive approach, as it focused on describing results rather than establishing cause-and-effect relationships among findings. Despite this limitation, the study has a considerable sample of evaluated participants. Therefore, it is suggested that future research adopts an explanatory or correlational approach, comparing experimental and control groups. More studies in this area of psychology are needed to contrast and expand knowledge in this application field.

## 6. Conclusion

In conclusion, this study did not find a statistically significant relationship between GRIT personality and sports talent in taekwondo athletes. These results support the notion that GRIT personality may not be a strong predictor of sports talent. However, the possibility of a relationship between these two concepts is not ruled out, as evidence supporting this association has been found. It is important to consider other factors and not rely solely on GRIT personality in improving sports talent. Further research is required to better understand the association between these two constructs, aiming to include more variables and different populations in future studies.

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