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# Athletes Engagement, Resilience, and Rate of Perceived Exertion on Portuguese National- and International-Level Wrestlers

Samuel D. G. Pedro<sup>1</sup>

**ABSTRACT.** Psychological factors are known to influence performances and athletes sports experiences. Within psychological factors known in sports context, resilience and engagement are 2 distinguished factors between successful and unsuccessful athletes. This study aimed to explore the relations between wrestlers' resilience levels and engagement perception. Performance perception and rated perceived exertion were conducted, concerning its relation with engagement and resilience. Results mainly suggest a positive association between athletes' resilience and engagement. Exploring these evidences may contribute to a more significant and deeper knowledge regarding athletes' resilience and engagement and coaches' role in nurturing these factors throughout athletes' sports careers.

**Keywords:** engagement, resilience, rate of perceived exertion, wrestling

Psychological factors differ between successful and nonsuccessful athletes, specifically when related to athletes' performance and overall sports experience (Sarkar & Fletcher, 2014). Positive (re)adaptation and coping ability towards adversities or threats allow athletes' more positive sports experiences. Research also indicates resilience as a crucial factor, helping athletes to improve and be protected against context demands (Sarkar & Fletcher, 2014).

Likewise, athletes' motivation is associated with sports participation and competition, being a construct dependent of personal and contextual factors (Ryan & Deci, 2000). Not being able to cope with contextual demands may expose athletes to burnout or dropout, so constructs such as engagement and disengagement are essential to main motivation theories explaining motivated behavior (Schaufeli & Salanova, 2007). In sports, motivation and engagement are also linked to motivational status, and positive persistent behaviors toward less positive events.

Skinner and Pitzer (2012) discussed engagement and motivation as two interconnected concepts, where *motivation* refers to

energy sources, direction, and duration toward actions, and *engagement* is the visual manifest of those components. To show their similarities, the authors explained some engagement characteristics as visual manifests of motivation; for example, effort, surpassing, vigor, intensity, vitality, and enthusiasm are indicators associated to energy. Interest, attention, and focus are direction indicators and, finally, absorption, determination, and persistence stand for signs of duration.

Research is congruent, addressing engagement and resilience as two important constructs related to more positive performances and sports experiences, depending on personal and contextual factors. However, research has not yet discussed systematically what contextual and personal factors promote resilience and how sport may enhance its development (Sarkar & Fletcher, 2014). Such responses may be vital as the ability to deal and cope with negative or stressful situations is a prerequisite to superior sports performances (Fletcher & Sarkar, 2012; Gould & Maynard, 2009).

Sarkar and Fletcher (2014) discussed that to better develop and understand resilience, research needs to focus on knowing protective and promotive factors, instead of focusing on stress factors. Also, it is important to consider the effect of interpersonal resources (teacher caring, social involvement) and personal resources (psychological skills). This study focuses only on personal factors (i.e., athletes' engagement and its relation with resilience).

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## Athletes' Engagement

*Athlete engagement* in sports is defined as a continuous sport experience that is relatively stable, with a positive effect on personal feelings about overall experience with a sport (Lonsdale, Hodge, & Jackson, 2007). Skinner and Pitzer (2012), from an educational standpoint, argued that engagement is a malleable state (not fixed), open to contextual conditions, modeled by task characteristics and interpersonal characteristics, occurring in engagement and reengagement cycles, also being a positive and persistent cognitive-affective experience.

Lonsdale, Hodge, and Jackson (2007) allocated to athletes' engagement four dimensions: confidence, dedication, enthusiasm, and vigor. *Confidence* is the belief in one's own competence in achieving high levels of performance and achieving defined goals; *dedication* is the desire of invest effort and time in meaningful goals to individuals'; *vigor* is the physical and psychological feeling of vivacity; and *enthusiasm* encompasses feelings of excitement and high levels of pleasure and satisfaction (Lonsdale, Hodge, & Jackson, 2007).

Also, engagement can be perceived as including behavioral, emotional, cognitive, and psychological characteristics. Research has shown that it promotes better performance; however, it is a recent subject of discussion in sports setting.

Athletes' engagement is described as one of the main reasons for pleasure and interest of youths' participation in sport (Castillo, Balaguer, Dias, & Duda, 2000; Gill, Gross, & Huddleston, 1983), showing its importance to sports performance and experience. Furthermore, pleasure is associated to higher participation frequencies; on the contrary, less pleasure is the cause of dropout among athletes (Gill et al., 1983).

## Resilience in Sports

To Rutter (2006), *resilience* refers to an individual's resistance and adaptability to risk experiences on personal and/or contextual level; it also unites two key ideas: exposition to a threat or adversity and development of a positive adaptation (Rutter, 2006; Sarkar & Fletcher, 2014).

In competitive sports, psychological resilience is an asset capable of promoting personal qualities and protecting athletes from potential negative effects of stressors (Sarkar & Fletcher, 2014). The authors suggest that personal psychological adaptations by individuals allow them to adapt accordingly to circumstances found on individual-context interaction.

Resilience research has not yet been systematically explored in sports psychology (Sarkar & Fletcher, 2014). However, resilience can be conceptualized as a trait, referring to several personal characteristics, which allows individuals' to adapt toward circumstances found in context and diverse stress sources (Wagnild & Young, 1990). Corroborating this assumption, Stein, Campbell-Sills, and Gelemter (2009) found a gene (5HTTLPR) that differentiated according to several emotional resilient profiles, being more present on more resilient

individuals. Contrary to this assumption, resilience can be theorized as a dynamic and multifactorial process occurring throughout life, resulting from personal and contextual characteristics and depending on individuals' response ability, circumstances, event nature, context, and personal development stage (Luthar & Cicchetti, 2000; Secades et al., 2014).

Sarkar and Fletcher (2014) stated that personal and contextual factors interact on resilience construction and development and that resilience encapsulates concepts such as stressors, cognitive challenge appraisal, metacognitions, and psychological factors such as positive personality, motivation, confidence, concentration, and social support perception, essential to a positive cognitive challenge appraisal.

To better comprehend resilience, it is essential to distinguish risk factors, such as anxiety, depression, and negative feelings, from protective factors, which promote positive adaptations such as life satisfaction, optimism, positive feelings, auto-efficacy, social support, and positive personality (White, Driver, & Warren, 2010).

Sarkar and Fletcher (2014) stated that sportive stress factors are linked to competition (inadequate preparation, injuries, and inadequate expectations), organization (travels, interpersonal relationships, and economic problems), and personal level, which are related to demands and challenges of life events outside the sports setting (work-life interface, family issues, and death of a significant person). Martinek and Hellison (1997) pointed out that adversity and the need to always improve in sport make it a context where an emphasis should be placed on the development of an increased capacity for resilience in sport participants.

To develop and nurture resilience growth, athletes' need a big adaptation ability and a certain controlled exposition to risk; also, trial-and-error experiences help to develop confidence and tolerance to frustration, assisting individuals in facing their difficulties more autonomously (Fletcher & Sarkar, 2012; Galli & Vealey, 2008).

More recent studies evidenced that more resilient athletes have better chances to achieve better results when facing adversities, such as injuries, low performance, diseases and career transitions, with the help of psychological skills like positivism, competitiveness, commitment, maturity, persistence and passion for the sport (Fletcher & Sarkar, 2014; Galli & Vealey, 2008).

## Bridging Athletes' Engagement and Resilience

Notwithstanding the individual and subjective nature, regarding athletes' engagement and resilience, research indicates that both are dependent of personal and social factors, which displays the influence of the individual psychological process and social context in developing psychological protective skills (Deci, 1992; Duda, 2001; Ryan & Deci, 2000).

Some studies on the educational setting show that more engaged students have better academic performances and are more resilient to everyday challenges (Skinner & Pitzer, 2012).

In addition, engagement research has also shown engagement as being the opposite concept of burnout (Lonsdale, Hodge, & Jackson, 2007). Also, evidence indicates resilience as an essential construct in promoting more persistent and positive behaviors in sports participation (Sarkar & Fletcher, 2014). Therefore, resilience and engagement are important constructs in sports, mainly because of the potential effect in helping athletes persist and buffer stressful events in sports. Moreover, they are crucial in reducing and preventing athletes' burnout and dropout symptoms, which are also related to athletes' motivation (Deci & Ryan, 2000; Skinner & Pitzer, 2012). This is especially important, considering that continuous engagement and reengagement cycles shape individual will and ability to deal with daily challenges (Skinner & Pitzer, 2012).

In sports, developing psychological factors protects athletes from potential negative effects related to high stress levels. Higher resilience in athletes is associated with optimism, less burnout symptoms, and better performance (Fletcher & Sarkar, 2012; Reche, Tutte, & Ortin, 2014), which shows a positive effect on athletes' performances and sport experiences.

Concerning resilience and its promotive factors, having greater engagement, having greater autonomy, controlling effort ability, and performing autonomous auto-regulations are considered factors that help resilience development (Lee et al., 2013; Luthar & Zelano, 2003; Masten, 2002). However, there is a research gap about athlete's engagement and resilience interaction and how they interact.

Studying resilience and engagement interaction as two important factors affecting athletes' performances and healthier psychological sports participation (Lonsdale, Hodge, & Jackson, 2007; Lonsdale, Hodge, & Raedeke, 2007; Sarkar & Fletcher, 2013), may allow for better understanding about engagement and resilience interaction in developing assets in a sports context that may enhance positive performance and sports experiences. Therefore, this study aimed to (a) explore the relation between engagement and its four dimensions with resilience in Olympic wrestlers; (b) explore how performance perception and rated perceived exertion interact with engagement and resilience; and (c) explore possible differences between national- and international-level wrestlers on the variables in study.

## METHOD

### Participants

This is a cross sectional study using a quantitative method assuming itself as descriptive-exploratory and correlational. Participants of this study were 20 (17 male, 3 female) wrestlers participating in a national team training camp in Portugal. On average, participants were 16.8 years old ( $SD \pm 1.96$ ) and had an average practice time of 5.4 years ( $SD \pm 4.2$ ). There were 9 cadets, 9 juniors, and 2 seniors; 11 were at the national level, and 9 at the international level.

### Instruments-Tests

Data were collected by questionnaires evaluating wrestlers' engagement and resilience levels; also, overall performance perception and rated perceived exertion and demographic data were collected.

We used the Athlete Engagement Questionnaire (Lonsdale, Hodge, & Jackson, 2007), which was adapted and validated to the Portuguese sports setting by Martins, Rosado, Ferreira, and Biscaia (2014). Consisting of 16 items divided into four subscales (confidence, dedication, enthusiasm, and vigor), responses were given on a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). The internal consistency (Cronbach's alpha) for this sample was .80 for the confidence subscale, .86 for dedication, .87 for vigor, and .87 for enthusiasm, showing good internal consistency.

The Resilience Scale 13-A (Wagnild & Young, 1993) was adapted and validated to the Portuguese setting by Oliveira (2014) and measures resilience using 13 items rated on a 7-point Likert scale ranging from 1 (*totally disagree*) to 7 (*totally agree*). The internal consistency of the instrument was .84 in this sample.

Rate of Perceived Exertion was measure using the Modified Borg Scale CR10 (Borg, 1998). Also, overall performance perceptions were collected using a 7-point scale ranging from 1 (*awful*) to 7 (*excellent*).

### Procedures

First, all coaches authorized athletes' participation. All participants signed a consent form that informed them that their participant was voluntary and confidential. Also, participants were informed that results would be stored in an encrypted database. After training, participants were given 10 min to answer questions on a questionnaire.

### Statistical Analysis

In the first moment of analysis, demographic data will be analyzed, followed by an adoption of a univariate analysis of means, standard deviations, skewness, and kurtosis. To measure the intensity of the relation between variables in wrestlers we will use the Spearman correlation coefficient. The significance level adopted to reject the null hypotheses will be  $p < .05$ , which corresponds to a wrong rejection probability of 5%. All of the statistical analyses were conducted with the resource of SPSS 20. Correlations on rated perceived exertion and performance perception will be conducted. Mean differences and effect size between national and international level competitors will be reported.

## RESULTS

The main goal of this study was to (a) explore the relation between athletes' engagement and resilience. Because the data were skewed, Spearman correlation was used to test the association between variables. Results, shown in Table 1, indicate that resilience and engagement had a positive significant correlation in wrestlers ( $r = .67, p < .01$ ). More specifically, engagement dimensions correlated to resilience were dedication ( $r = .56, p < .05$ ) and confidence ( $r = .74, p < .01$ ). Practice time was correlated with resilience ( $r = .51, p < .05$ ). All engagement dimensions were correlated with each other, and (b) perception of effort exertion was associated with vigor ( $r = .54, p < .05$ ) and with performance perception ( $r = .46, p < .05$ ).

Because the data were skewed (not normally distributed), the most appropriate statistical test was the Mann-Whitney  $U$  test, used to compare differences between national and international level wrestlers. Descriptive statistics indicate no significant statistical difference between national and international wrestlers, except on perceived effort exertion. Results are presented in Table 2. Cohen's effect size shows also a medium effect on perceived effort exertion ( $U = 21, p = .027, r = 0.49$ ).

## DISCUSSION

This article is the first study in the sports context that approaches the relation between resilience and engagement. Results found allow the advancement of knowledge about promotive and protective factors interacting with resilience development, more specifically in the wrestling setting.

This study aimed mainly to explore the relation between resilience and engagement. Research on these two constructs has already been developed in educational and work contexts; results have shown evidence of the relation between two constructs (Skinr & Pitzer, 2012). Results found in this article support evidence about the possible relation between engagement and resilience. Furthermore, it advances that dedication and confidence are associated variables in engagement most significantly associated with wrestlers' resilience in this sample.

Fletcher and Sarkar (2012, 2014) have argued that confidence is an important factor to develop resilience, especially in a sample of Olympic champions. Athletes who believe in their own competence in achieving high levels of performance and achieving defined goals are more likely to be more resilient.

Moreover, an association was found between athletes' vigor, overall engagement, and performance perception with rated perceived exertion. Such findings may allow one to better understand that feelings of vivacity, perceptions of a positive sports experience and positive performance perception, may allow athletes to be more vigorously involved in task and sports activity. These results are consistent with those of Villalobos and Obando (2008), who argued that achieving maximum resilience potential allows athletes to interpret their own emotions, reflect about events, make more efficient decisions, increase exertion of effort, and get a bigger task-related commitment. So, it is possible to understand that resilience ability is essential to healthy and significant sports performance and sports experience, where athletes have a more significant, and rational relation with sports activities.

Our study also corroborates Luthar and Cicchetti's (2000) assumption, where resilience is considered a dynamic and multifactorial process that occurs throughout life and grows over time. An association was found between practice time and resilience, showing that more experienced athletes are more prone to be more resilient; however, more research is needed in order to understand the possible fluctuation of the construct throughout sports careers and its effect according to positive and negative events.

Kant (2014), in a sample of 130 wrestlers in India studied which psychological factors influenced wrestlers performance, the findings show that lack of confidence, overstress, poor precompetitive mental preparation, inability to cope with opponent tactics, inability to focus during competition, lack of desire to win, and others (luck, injuries, overthinking) were the main factors that negatively influenced wrestlers performance. With the results in our study, we may elucidate that resilience and engagement are two important skills that may help overcoming these negative

TABLE 1 Correlations Among Resilience, Engagement, Practice Time, Performance, and Effort Exertion Perception

Variable	1	2	3	4	5	6	7	8	9
1. Resilience	—	—	—	—	—	—	—	—	—
2. Engagement	.670**	—	—	—	—	—	—	—	—
3. Confidence	.735**	.682**	—	—	—	—	—	—	—
4. Dedication	.559*	.914**	.463*	—	—	—	—	—	—
5. Vigor	.370	.887**	.522*	.722**	—	—	—	—	—
6. Enthusiasm	.401	.868**	.365	.842**	.770**	—	—	—	—
7. Practice time	.506*	.100	.163	-.011	.069	-.013	—	—	—
8. Performance perception	.104	.184	.290	-.089	.395	.104	-.016	—	—
9. Rate of perceived exertion	.463	.559*	.184	.413	.537*	.418	-.016	.464*	—

\* $p = .05$ . \*\* $p = .01$ .

TABLE 2 Means Difference Between International and National Level on Resilience, Engagement, Rate of Perceived Exertion, and Performance Perception

Variable	National wrestlers		International wrestlers		U	p	r
	M	SD	M	SD			
Resilience	73.22	9.32	73.25	3.53	29.50	.531	0.15
Engagement	67.63	7.74	70.42	6.52	29	.388	0.20
Confidence	16.00	2.00	15.77	2.33	47	.847	0.04
Dedication	17.27	2.37	17.88	1.69	44	.670	0.09
Vigor	16.63	2.11	18.25	1.66	23.5	.076	0.41
Enthusiasm	17.72	2.19	18.50	1.51	35.50	.473	0.16
Rate of perceived exertion	4.54	2.11	7.00	2.50	21	.027	0.49
Performance perception	5.00	.77	5.77	0.83	26.50	.062	0.41

psychological factors that may influence wrestlers' performance and sport experience.

In tandem, psychological factors are very important in wrestling, especially mental toughness (Gould, Hodge, Peterson, & Petlichkoff, 1987). Also, resilience is a crucial and structural factor in mental toughness. Given that wrestling is a high-energy, demanding combative sport that requires exhausting physical efforts to maximize performance, resilience and engagement are particularly pertinent skills that can have a potentially positive effect in wrestlers' abilities to cope during several demands of a wrestling match or training process and also potentiate athletes' capabilities in coping with difficulties and potentially negative-stressor events throughout their sports careers.

The results in this study concerning the differences between national- and international- level wrestlers relating to resilience and engagement levels show that there were no significant differences found, except in the rate of perceived exertion, where international wrestlers had higher levels. These results may oppose Bhardwaj, Singh, and Rathee's (2014) study, where authors found differences in mental toughness between international- and national-level wrestlers, where international wrestlers had higher levels of mental toughness. We may analyze these different results concerning difference of constructs. Also, such results may indicate an obvious assumption that international-level wrestlers may have an higher capacity to exert effort as much in training or in a match.

Despite the results of our study indicating an association between athletes' engagement and resilience, we must acknowledge some limitations. First, this is a cross-sectional study that does not allow us to make a cause-effect assumption; more research is needed to better understand the relation between the constructs. Second, the results of this study are only representative of a sample of Portuguese wrestlers, so the results may not be generalized to all wrestlers. The minor representation of female wrestlers was also a limitation; it does not allow us to interpret results for female wrestlers. Such limitation also limited our statistical analyses concerning gender. Nevertheless, we believe that

results may be more representative for the general population of wrestlers in Portugal. More research is needed to better understand the constructs relation according to gender, age, and competitive level. Longitudinal research works should also be a great advance in the understanding of the engagement and resilience relation.

In conclusion, this study contributes to a primary understanding of the possible relation between athletes' engagement and resilience, especially in wrestlers. We found evidence that these two constructs are positively associated in wrestlers. These evidences may suggest engagement as a protective or promotive personal factor that may affect athletes' resilience; however, this study does not allow generalization of results to all athletes.

More research is needed about the interaction between these variables; also, it would be important to include a social context variable as coaches' behaviors to see how resilience and engagement interact with personal and context variables.

### Practical Implications

This study may help coaches and sports psychologists to better understand the relation between being engaged and being more resilient in wrestling. This study brings some evidence that more engaged wrestlers will have more chances to be more resilient. Therefore, such wrestlers may accomplish better and more positive performances and a better overall mental health, contributing to a more positive sports experience when facing negative events or stressors. By being more resistant to everyday obstacles and positively readapting to negative events during their careers, wrestlers may overcome obstacles encountered both on and off of the wrestling mat. Overcoming and adapting to obstacles is an important skill in wrestling as wrestlers have several matches even before getting in the mat (e.g., weight lost, trials to the team, balancing school and social life). In conclusion, this work may help coaches, athletes, and sports psychologists to develop some strategies to build and consolidate resilience through more engaged sports participation.

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