

## Explorando la resiliencia en deporte. Apoyo del entrenador a la autonomía y compromiso del Atleta – Una contribución a la literatura

### Exploring resilience in sports. Coach's autonomy support and athletes engagement -A contribute to literature

### Explorando a resiliência no desporto. O apoio do treinador à autonomia e o compromisso do atleta - Uma contribuição para a literatura

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**Abstract:** Resilience study as a critical psychological factor in competitive sports setting has been growing widely in sports psychology field. Nonetheless, few are the studies that consider its interaction with personal and contextual factors and how they may enhance or promote its construction. This paper explores within Self-Determination Theory framework, coaches' autonomy support and athletes' engagement and their relationship and contribute towards resilience. A whole of 177 athletes were examined (78 ♀), with ages between 12 and 31. Results indicate that coaches' autonomy support and athletes' engagement are positively associated with resilience and that some engagement dimensions are more important than others to resilience development. A line of discussion is uncluttered about athletes' resilience development and how coaches' autonomy support and athletes' engagement interaction may impact protective and promotive dynamics.

**Key-words:** Resilience, Autonomy Support, Athletes Engagement, Self-Determination Theory

**Resumo:** A resiliência como fator psicológico crítico no desporto competitivo tem vindo a ganhar cada vez maior relevo na investigação. Contudo, poucos são os estudos que consideram a interação da resiliência com outros fatores pessoais e contextuais, e a forma que estes aumentam ou promovem a sua construção. Dentro do paradigma da Teoria da Autodeterminação, exploramos o Comportamento de Suporte à Autonomia do Treinador e o Empenhamento do Atleta e a sua relação com a Resiliência. Um total de 177 atletas (78 ♀), com idades compreendidas entre os 12 e 31 anos de idade, foram submetidos a estudo. Os resultados indicam que o suporte à

autonomia por parte do treinador e o empenhamento do atleta, associam-se positivamente à resiliência, e que algumas dimensões do empenhamento são mais importantes que outras para o desenvolvimento da resiliência. Por fim, abrimos uma linha de discussão sobre como o desenvolvimento da resiliência e como o comportamento de suporte à autonomia e o empenhamento do atleta interagem nas dinâmicas de proteção e promoção.

**Palavras-Chave:** Resiliência, Suporte à Autonomia, Empenhamento do Atleta, Teoria da Auto determinação.

**Resumen:** La resiliencia como un factor crítico en el deporte competitivo tiene ganado cada vez más relevo en la investigación. Todavía, pocos son los estudios que consideran la interacción de la resiliencia con otros factores personales o contextuales, y la forma que éstos incrementan o promueven su construcción. Adentro de lo paradigma de La Autodeterminación, exploramos lo Apoyo de lo Entrenador a la Autonomía y lo Compromiso de lo Atleta y su relación con la Resiliencia. Un total de 177 atletas (78 ♀), con edades entre los 12 y 31 han sido submetidos a estudio. Los resultados indican que lo Apoyo de lo Entrenador a la Autonomía y lo Compromiso de lo Atleta se asocian positivamente con la Resiliencia, y que algunas dimensiones de lo Compromiso son más importantes que otras para desarrollar la resiliencia. Por fin, abrimos una línea de discusión sobre como lo desarrollo da resiliencia y lo Apoyo de lo Entrenador a la Autonomía y lo Compromiso de lo Atleta interactúan en dinámicas de protección y promoción.

**Key-words:** Resiliencia, Apoyo a lo Autonomía, Compromiso de los atletas, Teoría de la Autodeterminación

The sports arena is a nowadays life setting that is growing and changing rapidly, taking sports participation rates to never seen levels, making worldwide competition for results each day more stringent, and record-holding less settled, resulting in stunning sports performances improvements. However, such developments also contribute to a greater level of athletes' exposition both physical and psychological towards superior

challenges, demands and stressful and thwarting factors or events that may affect their performances and sports experiences. Therefore, both coaches and sports psychologists must be able to understand such changings, and develop abilities and knowledge to help and teach athletes how to withstand, cope, adapt and overcome such harsh challenges, while upholding a successful performance without compromising their optimal psychological functioning and positive sports experiences.

Sports psychology studies, indicate that in order to attain a healthy psychological function and performances, athletes

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must learn and develop some psychological protective factors as more autonomous behaviors, engagement and resilience (Pedro, 2017; Pedro & Martins, 2017; Secades, Molinero, Barquín, Salguero, Sarkar, & Fletcher, 2014; Lonsdale, Hodge, & Jackson, 2007(a)) that later can be transferred to other life contexts; and that operative context must be able promote and empower other factors (motivation, coping ability, task involvement, engagement, perceived social support and resilience) that potentiate a positive reaction and adaptation to negative, stressful and challenging events or obstacles during their sports career (Sarkar & Fletcher, 2013; Ryan & Deci, 2000). In this paper, we aim to explore within Self-Determination theory framework how coach autonomy support and athletes' engagement may be associated and contribute to athletes' resilience.

### Self-Determination Theory in Sports

Self-Determination Theory (SDT) is a reliable background to study psychological factors in sports setting, explaining the "how" and "why" of human motivation and behavior while in interaction with contextual and interpersonal factors that impact individuals' optimal bio-social-psychological functioning (Mageau & Vallerand, 2003; Ryan & Deci, 2000). To Ryan & Deci (2000) human beings are motivated and functioning when three basic psychological needs are satisfied leading to better optimal and more autonomous motivation and behavior. The Basic Psychological Needs (BPN) are Competence (need to feel capable on a task or context), Relatedness (need of being connected and have a satisfactory relationship with significant others) and Autonomy (need of being able to choose and decide about own actions accordingly to own values and not by external opinions) (Ryan & Deci, 2000). Another element of SDT is rationalization of human motivation, here motivation exists from a less auto-determined form to a higher autonomous form throughout a continuum and this can determine athletes' performances, sport experience perceptions and regulate their behavior. To know, amotivation, extrinsic motivation (behaviors reasoned and regulated by results or expectations exterior to activity itself – rewards or punishments; resulting in controlled or less autonomous behaviors) and intrinsic motivation (realization of an activity for inner pleasure and satisfaction due to participation in it, resulting in more autonomous behaviors). Considering that both motivation and BPN are personal and contextual dependent, Ryan & Deci (2000), affirm that coaches should always aim in developing and fostering a need friendly motivational climate both in competition as in training. Such practices will contribute a higher level of well-being, more autonomous behaviors, leading to farther positive results. In sports, they are also linked to promotion of psychological factors as engagement, continuity, persistence,

concentration, better objective results and satisfied BPN. In order to complement those contexts, coaches may also apply contextual strategies design to satisfy athletes BPN, autonomous motivation and potentiate positive outcomes. There is Structure (satisfies feeling of competence), Involvement (satisfies feeling of related) and Autonomy Support (satisfies feeling of autonomy) (Ryan & Deci, 2000). However, regarding the aim of this study it's important to notice Adie, Duda, & Ntoumanis (2012) note, where they stated that training and competition settings are easy "manipulated" to increase competence and relatedness perceptions, nonetheless, autonomy satisfaction is not that easy to achieve and it is a crucial feature in athlete's psychological well-being and optimal, and normally coaches have a lack of autonomy support understanding due to existing "coaches-society" pre-concepts (criticism, focus on error pointing and fear of losing control of athletes or training variables).

### Coaches Autonomy Support

Autonomy support climates are associated to overall needs satisfaction, especially autonomy and competence which promotes more auto determined actions, autonomous motivations and engagement (Pedro & Martins, 2017; Deci & Ryan, 2006; Reinboth, Duda, & Ntoumanis, 2004; Mageau & Vallerand, 2003). The climate is characterized by behaviors of acceptance, understanding, recognition of athletes' cognitive needs, perspectives and feelings through delivery of pertinent feedback, always giving opportunities for choice within specific limits and with minimum usage of pressures and coercive demands (Mageau & Vallerand, 2003). Contrarily to this climate, coaches can apply an interpersonal coaching style involving athletes on tasks or activities without opportunities of choices, with little interest and where questioning is not allowed; which minimizes intrinsic motivation, reduces and threatens basic psychological needs, resulting in lower engagement and resistant behaviors towards activities (Occhinho et al., 2014). Nevertheless, in order to foster and nurture an autonomy on athletes it is necessary patience, sensibility, and genuine care, nonetheless this skill may be underpinned by top-down pressures, assumption that autonomy equals permissiveness or structure absence, fear of losing control of athletes, or even coaches own personality traits and learned teaching habits or traditions (Mageau & Vallerand, 2003).

Pelletier et al. (2001), argues that these styles are not bipolar, but possibly orthogonal, this means they are normally manifested differently regarding particular setting. Concluding, research indicates that coaches and athletes who are more autonomous, normally to are more engaged and try (successfully) deliver a high-quality performance in a more organized and more involving way. Autonomy support climates promote structure preserving training intensity, develop

athletes' engagement, performances, autonomy, overall needs satisfaction, persistence, realizations, learning, involvement by giving opportunities of choice and by making learning content relevant (Pedro & Martins, 2017; Occhino et al., 2014; Mageau & Vallerand, 2003).

### Athletes Engagement

Sports experiences and performances are dependent on both personal and contextual factors and impact athletes' perceptions, emotions, cognitions, and actions, especially when considering contextual factors as autonomy support climates.

Sports psychology research indicates that engagement is one of the most important reasons for youngsters' pleasure, interest and participation in sport, is also linked to higher participation frequencies, whereas less pleasure or less engagement is determinant to dropout (Gill, Gross, & Huddleston, 1983). Lonsdale, Hodge, & Jackson (2007a; 2007b) define athletes engagement as a continuous sports experience relatively stable, with a positive effect on cognitions about sport overall experience. The construct has four dimensions: *Confidence* (belief on owns competence in achieving high levels of performance and achieving defined goals), *Dedication* (desire of investing effort and time in meaningful goals to individuals), *Enthusiasm* (feelings of excitement and high levels of pleasure and satisfaction) and *Vigor* (physical and psychological feeling of vivacity) (Lonsdale et al., 2007a; 2007b). In addition, Skinner and Pitzer (2012) in educational setting explain engagement is a malleable positive and persistence cognitive-affective experience and state (not fixed), open to contextual conditions, modeled by task characteristics and interpersonal characteristics, occurring in engagement and (re)engagement cycles. Engagement has behavioral, emotional, cognitive and psychological characteristics, that may promote better sports and academics performances (Skinner & Pitzer, 2012; Lonsdale et al. 2007a; 2007b). Skinner & Pitzer (2012) explain that motivation and engagement are strongly associated, since motivation is related to sources of energy, direction, duration towards an action, while engagement is the visual manifestation of motivation representing those energy's, directions and durations. They also defend that effort, volition, vigor, intensity, vitality, and enthusiasm are all indicators of energy; interest, focus, and concentration are indicators of direction; absorption, determination, and persistence are signs of duration (Skinner & Pitzer, 2012; Mageu & Vallerand, 2003). In conclusion, considering that in some point of sports careers athletes have to deal with negative or less positive events or circumstances, studying constructs like engagement, disengagement and motivation are essential, since athletes need to be able to cope positively according to context demands, without affecting much their auto determined behaviors, cognitions and continuity

in sport (Skinner & Pitzer, 2012; Lonsdale et al. (2007a; 2007b).

### Resilience in Sport

Considering that it's not always possible to sense an immediate positive experience during sports experience and that competitive sports arena requires that athletes are able to persist and positively adapt towards negative events or circumstances, researchers have been arguing that in order to achieve more positive sports experiences, better objective outcomes and enriched performances athletes need to develop resilience (Pedro, 2017). Sarkar & Fletcher (2014, 2012) argue that resilience is a crucial psychological factor on athletes' capacity to overcome and adapt positively to less positive, more stressful and pleasurable circumstances or events in sport that can be linked to competition (inadequate preparation, injuries, inadequate expectations, low performances, self-conscious and rivalry's), organizational (personal and leadership issues, cultural and team issues, contextual and logistic issues and personal and performance issues) or even personal (Work-life interface, family issues, death of a significant one). Resilience studies began in clinical populations, however, sports researchers started to discuss that it is not equal to evaluate conscious athletes that expose themselves to difficult situations with goals of increasing and improving personal performance and compare them with individuals that were forced to exhibit resilient qualities with goals of maintaining normal function levels (Sarkar & Fletcher, 2012). Moreover, resilience can be defined as "resistance" and adaptability capacity towards risk experiences both on personal and contextual levels, that require an exposition to a threat or adversity, and development of a "positive adaptation" (Sarkar & Fletcher, 2012). Sarkar & Fletcher, (2014), state that in resilience psychological role per se- instead of mental processes and behaviors is central to avoid negative consequences (Sarkar & Fletcher, 2014). Also, resilience promotes psychological assets as, "unveiling" personal qualities that protect individuals towards potential negative effects of stressors, enabling better and more facilitative adaptations to negative or stressful circumstances found in individual-context interaction.

Regarding its nature, resilience can be conceived as a trait quality, related to several personal characteristics, which allows individuals to adapt towards different context-stress sources circumstances (Wagnild & Young, 1990). On contrary, resilience perceived as a dynamic and multifactorial process, which develops throughout life and depends on personal and contextual characteristics, depending on individual response ability, circumstances, event nature, context and personal development stage (Secades et al., 2014). Concluding it is important to notice that resilience can be dependent on individual owns qualities or skills; context in-

teraction and its capacity to potentiate or threaten resilience development, however, it is also important to differentiate risk factors (anxiety, depression and negative feelings) from protective and promotive factors (life satisfaction, optimism, positive feelings, auto-efficacy, social support and positive personality) (Sarkar & Fletcher, 2014).

So in conclusion, studying how and what kind of protective and promotive factors may allow athletes and coaches to array strategies in order to develop sport performance and how such characters may overcome less positive results via personal (Athletes Engagement) and interpersonal (coaches autonomy support) resources may enlighten ways to understand how coaches, educators, and sports psychologists can support everyday resilience and re-engagement on athlete's (Pedro, 2017; Pedro & Martins, 2017; Lee et al, 2013; Skinner & Pitzer, 2012).

We state that athletes who are more engaged within activity and also have opportunities to experience more autonomous climate in sports setting are more eager to sustain, adapt and develop psychological resilience in order to resolve risk situations inside owns cognitive, emotional and behavioral processes. This article aims to study coaches' autonomy support and athletes' engagement and their relationship with resilience. We hypostasize (1) that a greater autonomy support perception alongside with higher levels of athletes' engagement is positively associated with resilience. (2) There are differences between variables on individuals and team sports athletes. (3) There are differences between genders variables in study.

## Method

### Participants

Participants were 177 Portuguese athletes (99♂ and 78♀) with ages between 12 to 31 years ( $M=16.36$ ;  $SD=3.79$ ). 74.9% were less than 18 and 25.1% more than 18 years old. Types of sports were: Soccer ( $N=60$ ), Volleyball ( $N=28$ ), Artistic Gymnastic ( $N=27$ ), Judo ( $N=23$ ), Trampoline Gymnastic ( $N=14$ ), Wrestling ( $N=10$ ), Acrobatic Gymnastic ( $N=9$ ) and Aerobic gymnastic ( $N=6$ ) (49.7% individual sports and 50.3% team sports). Concerning competitive level, 133 (76%) were national competitors and 42 (24%) International (two athletes did not specify competitive level). Regarding sports training experience, experience range from 1 to 24 years ( $M=8.2$ ;  $SD=5.2$ ). Concerning their performance perception, 7.5% had a negative perception, while 92.5% had a positive perception.

### Procedure

Permission for data collection was asked to coaches and clubs' directors and a signed consent form was signed. Aims and

nature of the study, as well confidentiality of all answers was assured. Participation was voluntary and required completion of 3 questionnaires. Also, it was offered an option to withdraw from investigation at any time, average time of filling was 15 minutes.

### Instruments

*Coaches Autonomy Support.* Autonomy Support perception was evaluated by autonomy subscale of *Basic Psychological Needs Support Perception* (Markland & Tobin, 2010), adapted to Portuguese sports setting by Exercise and Well-Being Study Center. The scale evaluates climate perceptions concerning (Structure, Autonomy Support and Involvement). This tool has 17 items in a 5 Likert type scale, where 0 corresponds to "Totally not true to me" and 4 "Totally true to me". Only autonomy support subscale was used in this study. The internal consistency (Cronbach Alpha de) for this sample was .799.

*Athletes Engagement.* Athletes Engagement was measured by *Athlete Engagement Questionnaire* (AEQ) of Lonsdale et al. (2007), adapted and validated to Portuguese context by Martins, Rosado, Ferreira e Biscaia (2014). This tool is a 16 items 5 Likert type scale, where 1 corresponds to "Almost Never" and 5 "Almost Always". The scale divides in 4 dimensions: Confidence, Dedication, Enthusiasm and Vigor. Internal consistency (Cronbach's Alpha) to this sample was Confidence .82, Dedication .83, Enthusiasm .80 and Vigor .72.

*Resilience.* Resilience was measured by *Resilience Scale* of Wagnild and Young (1993) short version (RS13-A), adapted and validated to Portuguese context by Oliveira (2014). RS13-A measures resilience through 13 items concurring to one factor. The scale is a 7 Likert type, where 1 corresponds to "Totally disagree" and 7 "Totally agree". Internal consistency for this sample was .82.

### Statistical Procedures

Data normality was tested and values and threshold assured normality (-1.96 to 1.96; asymmetry (-1.489); kurtoses (-.27); Shapiro-Wilk (.117,  $p>.05$ ). In gender normality, men had asymmetry (-1.47) and kurtoses (-0.42) and a Shapiro-Wilk value of (.17,  $p>.05$ ). Females had asymmetry (-.42), kurtoses (-.57) and Shapiro-Wilk value of (.88,  $p>.05$ ). Internal consistency of four instruments to this study sample was: *Resilience Scale* (.82); *Athlete Engagement Questionnaire* to Confidence (.82), Dedication (.83), Enthusiasm (.80), Vigor (.72); *Basic Psychological Needs Support Perception* (Autonomy subscale .799).

In preliminary analysis Pearson correlation coefficient was calculated using SPSS 21 and correlations all constructs were tested. Also mean differences between type of sport, gender, age groups and competitive level were analyzed. Finally, a

linear regression method was conducted to test hypostasized model.

## Results

### Preliminary analysis, Descriptive Statistics and Means Differences

Correlation tests were applied to Autonomy support, Athletes engagement and its subsequent subscales, and Resilience. Results indicate that resilience was correlated to all variables in study (for more details see Table 1). Autonomy

support was not associated with athletes' overall engagement. However, autonomy support is positively associated to Enthusiasm ( $r=.178, p<.05$ ). Additionally, overall athletes' engagement is associated with resilience ( $r=.318, p<.01$ ). Specifically, all engagement dimensions are positively and significantly associated to resilience, Confidence ( $r=.466, p<.01$ ), Dedication ( $r=.511, p<.01$ ), Vigor ( $r=.555, p<.01$ ) and Enthusiasm ( $r=.456, p<.01$ ). Finally results indicate that athletes' performance perception is moderately associated to autonomy support ( $r=.247, p<.01$ ), overall engagement ( $r=.236, p<.01$ ), Confidence ( $r=.214, p<.01$ ), Dedication ( $r=.195, p<.01$ ), Vigor ( $r=.165, p<.05$ ) and to resilience ( $r=.272, p<.01$ ).

Table 1. Means, Standard Deviations and correlations among Autonomy Support, Engagement and Resilience.

	M	SD	1	2	3	4	5	6	7	8
1. Autonomy Support	15.03	3.86	-	-	-	-	-	-	-	-
2. Engagement	71.34	.89	.084	-	-	-	-	-	-	-
3. Confidence	16.66	.55	-.042	.761**	-	-	-	-	-	-
4. Dedication	17.92	.37	.139	.837**	.477**	-	-	-	-	-
5. Vigor	17.85	.11	.107	.841**	.429**	.691**	-	-	-	-
6. Enthusiasm	18.90	.66	.178*	.735**	.429**	.472**	.594**	-	-	-
7. Resilience	67.17	.36	.318**	.619**	.466**	.511**	.555**	.456**	-	-
8. Performance Perception	4.96	.95	.247**	.236**	.214**	.195**	.165*	.150	.272**	-

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

Mean differences between groups through an independent T-tests indicate differences between individual and team sports (Table 2). Differences emerge on autonomy support percep-

tion and vigor, individual sports athletes have higher levels of autonomy support perception, while team sports athletes present more vigor.

Table 2. Mean differences between Individual and Team sport athletes.

	Individual Sports		Team Sports		<i>t</i>	<i>p</i>	<i>df</i>
	M	SD	M	SD			
1. Autonomy Support	16.23	3.87	13.85	3.49	4.26	.00	172
2. Engagement	70.01	7.39	72.25	6.41	-1.95	.05	145
3. Confidence	16.40	2.82	16.85	2.33	-1.05	.29	147
4. Dedication	17.52	2.70	18.20	2.07	-1.75	.08	149
5. Vigor	17.26	2.22	18.24	1.94	-2.84	.00	147
6. Enthusiasm	18.88	1.70	18.91	1.64	-.08	.93	149
7. Resilience	67.94	8.34	66.63	6.57	1.08	.282	149
8. Performance Perception	4.89	1.02	5.03	.897	-.876	.382	172

Mean differences between groups by independent T-tests revealed differences between masculine and feminine athletes

(Table 3), differences emerge on autonomy support, overall engagement, confidence and vigor.

Table 3. Mean differences between Masculine and Feminine Athletes.

	Masculine		Feminine		<i>t</i>	<i>p</i>	<i>df</i>
	M	SD	M	SD			
1. Autonomy Support	14.12	4.08	16.19	3.22	-3.63	.000	172
2. Engagement	72.59	6.81	69.18	6.53	2.96	.004	145
3. Confidence	17.30	2.48	15.60	2.30	4.13	.000	147
4. Dedication	18.10	2.35	17.60	2.37	1.24	.213	149
5. Vigor	18.23	1.91	17.18	2.29	2.98	.003	147
6. Enthusiasm	18.94	1.69	18.81	1.62	.460	.646	149
7. Resilience	67.26	7.75	67.02	6.71	.197	.844	149
8. Performance Perception	4.93	1.01	5.00	.879	-.487	.627	172

No differences were found concerning competition levels. (Table 4).

Table 4. Mean differences between National and International Level Athletes.

	National Level		International Level		<i>t</i>	<i>p</i>	<i>df</i>
	M	SD	M	SD			
1. Autonomy Support	14.97	3.67	15.24	4.52	-.38	.702	170
2. Engagement	71.61	6.79	70.68	7.29	.62	.537	143
3. Confidence	16.63	2.56	16.84	2.61	-.35	.723	145
4. Dedication	18.06	2.25	17.56	2.59	.99	.321	147
5. Vigor	18.03	2.06	17.20	2.14	1.78	.083	145
6. Enthusiasm	18.87	1.65	19.08	1.80	-.57	.571	147
7. Resilience	67.22	7.23	67.48	8.16	-.16	.872	147
8. Performance Perception	5.01	.89	4.83	1.16	1.04	.301	170

Mean differences between age groups (Table 5), emerged on overall engagement, dedication, vigor and performance per-

ception where athletes with less than eighteen years old score higher scores.

Table 5. Mean differences between age groups.

	Less than 18 years old		More than 18 years old		<i>t</i>	<i>p</i>	<i>df</i>
	M	SD	M	SD			
1. Autonomy Support	15.05	3.49	15.07	4.74	-.023	.982	170
2. Engagement	72.10	6.18	69.30	8.26	2.23	.028	145
3. Confidence	16.80	2.44	16.37	2.82	.915	.362	146
4. Dedication	18.21	2.06	17.20	2.94	2.38	.019	148
5. Vigor	18.14	1.90	17.07	2.44	2.84	.005	147
6. Enthusiasm	19.04	1.52	18.51	1.98	1.76	.080	149
7. Resilience	67.40	7.03	66.6	8.30	.550	.583	148
8. Performance Perception	5.08	.92	4.59	.99	3.01	.003	170

### Main Analysis

A simple linear regression was calculated to predict athletes' resilience based on autonomy support perception and athle-

tes' engagement. Autonomy support perception and Athletes engagement significantly predicted resilience scores ( $F(5,139)=23.521, p<.000$ ), with an  $R^2$  of .458.

Table 6. Linear Regression Analysis.

Model Summary		R2	Adjusted R2	F	t	
		.458	.439	23.521	.000	
				Beta	t	p
Dependent variable (Resilience)				16.289	2.948	.004
Predictors	Confidence			.755	3.387	.001
	Dedication			.425	1.508	.134
	Vigor			.973	2.931	.004
	Enthusiasm			.304	.842	.401
	Autonomy Support			.512	4.241	.000

## Discussion

This paper aimed to understand and explore coaches' autonomy support, athletes' engagement and its relationship with athletes' resilience, such interest was supported by Fletcher & Sarkar (2012) hint that it is more important to focus on knowing and discovering protective and promotive factors instead of focusing on knowing risk or stress factors in order to develop better and healthier sports participations. Also, associated factors with resilience development seems to be an important subject since resilience is associated to better academic and sports performances and improved cognitive abilities, especially regarding its power to promote coping and adapting abilities towards negative and stressful events throughout life.

The first result of this research states a positive association between resilience, coaches' autonomy support and athletes' engagement. Such results are not replicated in any founded study in sports psychology setting. Nevertheless, some auxiliary and similar results have been described in other studies. Pedro (2017) and Pedro & Martins (2017), found in Olympic Wrestling athletes that resilience is associated to athletes' engagement, and also coaches' autonomy support was associated to athletes' engagement. Our results support successfully this line of research, by bridging the three constructs. Moreover, Skinner & Pitzer (2012) also stated that interpersonal and personal resources, such as teacher care and feelings of autonomy support everyday students' resilience. Another study is Wong (2008), where higher levels of parental support and more parental responsiveness when integrated with regulated parental expectations were positively associated with resilience on youngsters.

Likewise, accordingly, to association strength we verify that is athletes' engagement that has a stronger association to resilience development, what may suggest that despite being a dynamic process, resilience development and manifestation

may be more dependent on personal and inner psychological factors. Nevertheless, our results through a linear regression, indicating that constructs that more eagerly contribute to athletes' resilience are in fact coaches' autonomy support, and athletes' engagement dimensions of confidence, enthusiasm, and vigor.

Such findings may enlighten that resilience development is dependent of both personal factors, as athletes' engagement and contextual factors, as autonomy support, and that none of them are more important than the other. Also, these findings may suggest that coaches who support athletes' autonomy may better contribute to developing higher levels of active involvement and engagement, which may result in more autonomous motivations and behaviors (Sarkar & Fletcher, 2014, 2012).

Concluding this section of discussion, we stated that coaches who effectively support athletes needs for autonomy by allowing opportunities for choice within limits, displaying acceptance behaviors and recognition of athlete's needs, may in fact contribute to a wider ability to their athletes in a way where they can internalize values, practices, and competencies that could possibly result in more engagement towards sport activities and therefore also create a solid foundation for resilience development and growth. What may also result in better capacity in athletes to withstand, cope and adapt more positively and maintaining an optimal psychological functioning towards more stressful or negative events and still have a positive performance and positive sports experiences (Fletcher & Sarkar, 2012; Mageau & Vallerand, 2003).

Regarding athletes' resilience and coaches' autonomy support, our results indicated a positive association between variables. Meaning that autonomy supportive climates perceptions are important to develop athletes' resilience. In this line, Sarkar & Fletcher (2014, 2012) suggest that athletes in order to develop resilience need a strong and positive social support perception, and also Mageau & Vallerand (2004) indicated

that coach-athlete relationship is the most important element to athletes' success, so a climate directed to autonomy support where an athlete that does not feel obligated or coerced to deliver a performance during a task may provide better development of resilience.

Results concerning resilience and athletes' engagement relationship show a positive association between variables. These results are in line with Pedro (2017) and Furrer, Skinner & Pitzer (2014) where higher levels of engagement were associated to resilience development and to re-engaging ability after a negative event. So, coaches need to understand that when nurturing athletes' engagement and its dimensions, may also be contributing to their ability to be more engaged towards an activity and also contributing resilience development. By other words, we mean that, coaches who continuously promote positive and stable sport experience, regarding also its positive effects on athletes' cognitions may supply an array of feelings of competence and desire on athletes' to invest effort and time while feeling excitement, pleasure and satisfaction both physically and psychologically, which in turn may contribute to more positive adaptations and better chances to overcome less positive events, circumstances or obstacles present in their sports path.

Results about coaches' autonomy support and athletes' engagement indicated no association between constructs. However, enthusiasm dimension of athletes' engagement is associated with autonomy support. This result may indicate that coaches' autonomy support may contribute to athletes' feelings of excitement, pleasure, satisfaction during sports participation.

Moreover, it is important to state that these results, are not in line with several sport psychology studies, where autonomy support appears to be correlated to athletes' engagement. For instance, Pedro & Martins (2017), Curran et al., 2013, and Deci & Ryan, 1987, found in their studies that autonomy support is positively associated with engagement. This contrary may limit our study findings; however, we may state that such results may be due to different instruments used to evaluate the constructs, or even the fact that engagement may be a malleable state open to contextual conditions, modeled by task characteristics and interpersonal characteristics and occurring in cycles (Skinner & Pitzer, 2012), which may have negatively influenced autonomy support and engagement relationship.

Athletes' performance shows a positive association with coaches' autonomy support, overall engagement and its dimensions of confidence, dedication, vigor and resilience. This may mean that athletes who tend to view their performance throughout their career as a positive one, may be able to be more autonomous, more engaged by believing that they can achieve higher results and higher performers by putting effort and time in sports overall experience and by being physically and psychologically energized. Such trait may promote a

better ability to cope with less positive events, tasks or circumstances in sports experience, which will allow better and healthier sports performances and overall sports experiences.

Concerning differences between individual and team sports, results found differences in autonomy support perceptions where individual sports athletes display higher perception of autonomy support, this may be due to greater levels of closeness between athletes and coaches. Which may specify that individual sports coaches should focus more on autonomy support in order to develop athletes' resilience. Team sports athletes revealed more vigor than individual athletes, which may be due to greater group dynamics that promote further feelings of vivacity and being alive. Also, it is important to notice that vigor is an important contributor to resilience.

Unveiling gender differences results, appears that female athletes have higher levels of autonomy support, which may indicate a closer relationship with coaches and there for coaches should be aware of this important feature and try to promote higher autonomy climates, which may help in developing athletes' resilience. Male athletes, exhibit higher engagement levels, especially confidence and vigor, which may signify that contextual factors like autonomy support are more important to female athletes, while to male athletes' personal factors like engagement are more related to resilience development.

Age groups differences were found related to overall engagement, dedication, vigor and performance perception where less than eighteen years old athletes score higher levels, suggesting that coaches when trying to promote overall engagement, and more positive performances perceptions should differ their intervention, since athletes become more critique about their performance as they grow older.

No differences were found between national and international level athletes, which may suggest that autonomy support, athletes engagement, and resilience are not associated to level of competition.

## Conclusions

Concluding this paper, it is possible to understand that both coaches' autonomy support and athletes' engagement are empowering constructs that may help to develop promotive and protective qualities on athletes towards better adaptation and coping with less positive events during their sport careers. Also, it is possible to recognize that athletes who are more autonomous and more engaged within sports performances and experiences are more motivated, and also develop a willpower to help others. This suggests that resilience, autonomy, and engagement may be positive psychological skills that later can be transferable to other life contexts enhancing the positive contribution from sports participation. However, despite



positive results found in this study resilience in sport is yet a construct that needs more enlightenment, for instance considering its association with other constructs, or its longitudinal nature or event specific manifestation.

Such advancements would be necessary, since, resilience differs according to action contexts of individuals (Sarkar & Fletcher, 2013; Luttar et al. 2000). Finally, we can state that coaches who are positively focused on support athletes' autonomy by giving them useful and significant information may allow athletes' to better develop effective strategies to reduce pressures, fears and increase goals orientation. Also, coaches who plan and structure training may allow athletes to develop in a secure and more confident way their ability in accessing and managing more positively certain less positive feelings or situations.

So, ensuring higher autonomy support climates, higher engagement and autonomous motivations athletes may be more protected from stressors increasing their optimal psychological functioning and resilience. This study offers a step further on resilience research, which may help to discuss more systematically the construct and its relationship with others variables, such personal as contextual. Ultimately, we want to reassure that resilience is an important factor to athletes' sports experience, since it is well known that dealing with stressful situations is a pre-requisite to a good sports performance and sports experience (Sarkar & Fletcher, 2012).

## Practical implications

Concerning, resilience related sports research we understand that resilience development may happen thru protective and promotive factors, via an examination of contextual (Coach Autonomy Support) and personal factors (Athletes Engagement).

The practical implications of this study are related to the encouragement of usage of more autonomy supportive contexts by coaches and promotion of activities that may have a positive impact on athletes' engagement within the activity which may lead to resilience development and therefore a bigger aptitude to overcome negative and potential stressful events and performing at the highest personal level.

More studies should be conducted in a longitudinal perspective and with bigger samples. Tracking resilience and engagement after a loss or other negative event (eg. injuries) and understand how autonomy support behavior from the coach influences these processes of (re)engagement with the activity can also bring interesting results.

## Declaration of conflicting interests

Aauthor's declared no potential conflicts of interest with respect to research, authorship, and/or publication of this article.

## References

- Adie, J.W., Duda, J.L., & Ntoumanis, N. (2012). 'Perceived coach-autonomy support, basic need satisfaction and the well- and ill-being of elite youth soccer players: A longitudinal investigation'. *Psychology of Sport and Exercise*, 13(1), 51-59.
- Curran, T., Hill, A. P. & Niemiec, C. P. (2013). A conditional process model of children's behavioral engagement and behavioral disaffection in sport based on self-determination theory. *Journal of Sport and Exercise Psychology*, 35 (1), 30-43.
- Deci, E. & Ryan, R. (2006). Self-Regulation and the problem of human autonomy: Does psychology need choice, self-determination and will?. *Journal of Personality*, 74(6), 1557-1586.
- Deci, E. L., & Ryan, R. M. (1987). The support of autonomy and the control of behavior. *Journal of Personality and Social Psychology*, 53(6), 1024-1037.
- Fletcher, D. & Sarkar, M. (2012). A grounded theory of psychological resilience in Olympic champions. *Psychology of Sport and Exercise*, 13, 669-678.
- Furrer, C. J., Skinner, E. A., & Pitzer, J. R. (2014). The influence of teacher and peer relationships on students' classroom engagement and everyday resilience. In D. J. Shernoff & J. Bempechat (Eds.), *National Society for the Study of Education Yearbook. Engaging Youth in Schools: Empirically-Based Models to Guide Future Innovations*, 113, (pp. 101-123). Columbia University: Teachers's College.
- Gill, D. L., Gross, J. B. & Huddleston, S. (1983). Participation motivation in youth sports. *International Journal of Sport Psychology*, 14, 1-14.
- Lee, J. H., Nam, S. K., Kim, A., Kim, B., Lee, M. Y. & Lee, S. M. (2013). Resilience: A meta-analytic approach. *Journal of Counseling and Development*, 91, 269-279.
- Lonsdale, C., Hodge, K., & Jackson, S.A. (2007a). Athlete engagement: II. Development and initial validation of the Athlete Engagement Questionnaire. *International Journal of Sport Psychology*, 38(4), 471-492.
- Lonsdale, C., Hodge, K., & Raedeke, T.D. (2007b). Athlete engagement: I. A qualitative investigation of relevance and dimensions. *International Journal of Sport Psychology*, 38(4), 451-470.
- Mageau, G., & Vallerand, R. (2003) The coach-athlete relationship: a motivational model. *Journal of Sports Science* (21),883-904.
- Markland, D. & Tobin, V.J. (2010). Need support and behavioral regulations for exercise among exercise referral scheme clients: The mediating role of psychological need satisfaction. *Psychology of Sport and Exercise*, 11, 91-99.
- Martins, P., Rosado, A., Ferreira, V., Biscaia, R. (2014). Examining the validity of the Athlete Engagement Questionnaire (AEQ) in a Portuguese sport setting. *Motriz, Rio Claro*, 20 (1), 1-7.
- Occhino, J., Mallet, C., Rynne, S., & Carlisle, K. (2014). Autonomy-Supportive Pedagogical Approach to Sports Coaching: Research, Challenges and Opportunities. *International Journal of Sports Science & Coaching*, 9(2) , 401-415.
- Oliveira, A. (2014). *Estudo das Propriedades Psicométricas da Escala de Resiliência, versão breve (RSI3-A): A resiliência e a relação com a sintomatologia depressiva numa amostra de adolescentes portuguesas*. Tese de Mestrado, Universidade de Coimbra, Faculdade de psicologia e de ciências da Educação.
- Pedro, S. (2017). Athletes Engagement, Resilience, and Rate of Perceived Exertion on Portuguese National-and International Level Wrestlers. *International Journal of Wrestling Science*, 6(5), 5-10. DOI: 10.1080/21615667.2016.1166299.

17. Pedro, S. & Martins, P. (2017). Autonomy Support, Engagement and Perceived Effort Exertion in Wrestlers. *Revista Iberoamericana de Psicología del Ejercicio y el Deporte*, 12(2), 279-286.
18. Pelletier, L., Fortier, M., Vallerand, R.J. & Brière, N.M., (2001). Associations Among Perceived Autonomy Support, Forms of Self-Regulation, and Persistence: A Prospective Study, *Motivation and Emotion*, 4(25), 279-306.
19. Reinboth, M., Duda, J.L., & Ntoumanis, N. (2004). Dimensions of coaching behavior, need satisfaction, and the psychological and physical welfare of young athletes. *Motivation and Emotion*, 28, 297-313
20. Ryan, R. & Deci, E. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25, 54-67
21. Sarkar, M. & Fletcher, D. (2013). How should we measure psychological resilience in sport performers? *Measurement in Physical Education and Exercise Science*, 17, 264-280.
22. Sarkar, M. & Fletcher, D. (2014). Psychological resilience in sport performers: a review of stressors and protective factors. *Journal of Sports Science*, 32, 1419-1434.
23. Secades, G., Molinero, O., Barquín, R., Salguero, A., Vega, R., & Márquez, S. (2014). La resiliencia en el deporte: fundamentos teóricos, instrumentos de evaluación y revisión de la literatura. *Cuadernos de Psicología del Deporte*, 14(3) 83-98.
24. Skinner, E. A., & Pitzer, J. (2012). Developmental dynamics of engagement, coping, and everyday resilience. In S. Christenson, A. Reschly, & C. Wylie (Eds.), *The Handbook of Research on Student Engagement*. New York: Springer Science. 21-45.
25. Wagnild, G. & Young, H. (1990). Resilience among older women. *Journal of Nursing Scholarship*, 22(4), 252-255.
26. Wagnild, G. & Young, H. (1993). Development and psychometric evaluation of the Resilience Scale. *Journal of Nursing Measurement*, 1(2), 165-178.
27. Wong, M., (2008). Perceptions of Parental Involvement and Autonomy Support: Their Relations with Self-Regulation, Academic Performance, Substance Use and Resilience among Adolescents. *North American Journal of Psychology*, 497-518.