The relationship of resilience and anxiety in volleyball

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ABSTRACT

The purpose of this study was to investigate the relationship between resilience levels and anxiety of volleyball players and to find possible differences that exist between the two genders. Participants included 195 volleyball players (37 male and 158 female), with the Self Evaluation Resilience test and the CSAI-2 test (Greek version) used as evaluation instruments. The data was analysed with SPSS 21.0 using Pearson's r and t-test for independent samples. Results of Pearson's r test showed positive intercorrelations between all the resilience variables and between resilience and self-confidence. The t-test showed statistically significant differences between male and female volleyball players in "*forming relationships*" and "*self-efficacy*" variables, with no other statistically significant differences observed for the rest of the resilience variables. Additionally, statistically significant differences were observed for "*cognitive*", "*somatic*" anxiety and "*self-confidence*" between the two genders of volleyball players. Future research should further investigate the relationship between resilience and self-confidence and how it affects the resilience level of volleyball players.
Keywords: Physical activity, Sport psycology, Volleyball, Gender differences, Resilience, Anxiety.

INTRODUCTION

Mental resilience as a general term refers to the positive adjustment of an individual following a traumatic event as well as their ability to recover. According to many authors (Masten & Wright, 2010; Zautra, 2014; Luthar, Crossman, & Small, 2015), recovery, positive adaptation to adversity, and balanced sustainability (physical, emotional, and systemic) are elements of the resilience concept. This, in turn, means that two critical conditions are indirectly related to the concept of resilience; a) exposure to adversity (threat / danger or positive event); and b) achieving a positive adjustment, since the display of resilience primarily requires an athlete to face their difficulty or achieve a positive adjustment (Charney, 2004; Masten & Wright, 2010; Sarkar, Fletcher, & Brown, 2015).

A definition of resilience closely related to sports settings is defined as "*the role of mental processes and behaviour in promoting personal assets and protecting an individual from the potential effect of negative stressors*" (Fletcher & Sarkar, 2012, p. 675, 2013, p. 16). This definition recognizes the support of trait-like protective factors and (mental) processes which define how one adapts to adversity (Fletcher & Sarkar, 2012, 2013; Galli & Gonzalez, 2015).

Research studies show that resilience is strongly associated with the requirements of the adverse event status (Fletcher & Sarkar, 2013; Rutter, 1981) and the interaction of the athlete with the environment (Luthar, Cucchetti, & Becker, 2000; Fletcher & Sarkar, 2012, 2013, Sarkar, & Fletcher, 2014; Sarkar, Fletcher, & Brown, 2015). These distinct, social, cultural and environmental factors affect an individual's overall ability to recover. According to Masten and Wright (2010), although the study of human resilience focuses specifically on understanding these differences due to adverse experiences, resilience should not be assumed as a static characteristic of an individual, as it derives from various processes and interactions that far exceed the human body and include interpersonal relationships and social settings to achieve positive adjustment.

Understanding how an individual acquires the characteristics or properties that make both the process and the result feasible (resilience) (Luthar, Cicchetti, & Becker, 2000), primarily requires the simultaneous study of these elements that allow the appearance and degree of resilience through the perspective of a dynamic process that takes into account the effect of positive adjustment and / or overcoming - which occurs after exposing an athlete to adversity (Waller, 2001).

Relevant research clearly states that internal resilience factors include personality traits, emotion regulation, assessment and problem-solving skills, self-awareness, and various aspects of positive well-being (Smith, Hayslip, Jr., 2012). In addition, positive traits such as forgiveness, optimism, a sense of purpose, and dominance have been identified as important internal aspects of resilience (Masten & Wright, 2010; Zautra, 2014).

Many studies also show that resilience seems to be associated with experiencing positive emotions, optimism and humour. People who have these characteristics possess the ability to observe difficulties from a different perspective than others and to exhibit a positive attitude (Seery, Holman, & Silver, 2010; Seery, 2011). A positive self-image is also a protective factor that plays a very important role in creating resilience, especially when a person recognizes their positive features and has the feeling that they can control their life and future and recover easier from any encountered difficulty. This positive attitude helps an athlete to deal more effectively with difficult situations such as defeat after a game of significant interest for the team and continue with their efforts (Gould, Finch, & Jackson, 1993; Van Geert, 2009).

An external factor possibly related to resilience is the existence of a supportive social network such as the environment of a volleyball team. When an athlete is surrounded by people with mutual understanding, he has the opportunity to express his feelings and receive the appropriate support and acceptance. However, so far no social factor or set of factors have yet been identified that create resilience in highly competitive sports environments such as those within volleyball teams (Rutter, 1981; Galli & Gonzalez, 2015; Patsiaouras 2020a).

Some studies have even reported contradictory results. As an example, Fletcher and Sarkar (2012) noted that high levels of perceived social support were positively associated with resilience, while Mummery, Schofield, and Perry (2004), observed that resilient athletes exhibited lower levels of perceived social support as compared to their non-resilient teammates. Furthermore, not all professionals experience such negative effects. In fact, many of them are particularly resilient even under stressful working conditions (Masten & Wright, 2010). Possibly, setting goals for the athlete and the volleyball team prior and during the season will help players to recover more easily after a negative game result.

In conclusion, resilience is a complicated process and not just an ability that depends exclusively on the athlete, but results from the continuous interactions of different factors related to the individual and his environment over time (Fletcher & Sarkar, 2013; Sarkar, Fletcher, & Brown, 2015). This complex process of resilience is very likely to occur in volleyball during different games or difficult sets.

In volleyball, players are always interacting with each other, with the opponents, the ball, the referees and so on. These actions of the players and their opponents constantly affect each other as they adapt to the continuous scoring changes of the game. Currently, research on resilience has shown that some athletes are able to cope with negative performance and return to a successful one, while others do not deal effectively with such negative transitions that in turn leads to lower performance levels (Kelso, 1995; Scheffer et al., 2012; Schöner & Kelso, 1988; Van de Leemput, et al. 2014).

According to several researchers (Bonanno, 2004; Van de Leemput, *et al.,* 2014), following such transitions it is usually difficult for the athlete to fully regain his previous level of performance. Sarkar and Fletcher (2014) stated that resilience also appears whilst a player attempts to find functional balance when facing difficulty (Bonanno, 2004; Mancini & Bonanno, 2009) and taking necessary actions to protect themself from possible negative effects or stressors (Fletcher & Sarkar, 2012; 2013). Anxiety although extensively researched as a term, has not yet been examined in interaction with the resilience of volleyball players (Patsiaouras 2021a).

Anxiety is a very common condition that most athletes experience before, during and after training or competitions. In sports, anxiety is separated into trait anxiety and state anxiety, as well as, into cognitive and somatic anxiety (Martens, & Gill, 1976). Trait anxiety, a stable characteristic of personality, is an important factor in the sports domain. It is a fact and often obvious in everyday practice, when male and female athletes doubt themselves, their ability level, and succession in a game. According to many researchers, anxiety influences the performance of an athlete during the game in a negative way (Maynard, Hemmings, Warwick-Evans, 1995). Theodorakis, Goudas, and Papaioannou (2001) states that two factors are responsible for the presence of anxiety in sports; a) uncertainty regarding the outcome. and b) the importance of the outcome as perceived by the athlete (Maynard, Hemmings, Warwick-Evans, 1995). Many studies found that there is an interactive negative relationship between self-confidence and cognitive and somatic anxiety prior games (Yan Lan, and Gill 1984; Krane, Williams, and Feltz, 1992).

As Samulski (1987) noted, athletes feel anxiety due to inadequate preparation, expected anticipations, presence of a strong opponent, disappointment after defeat, danger of injury, new and unfamiliar circumstances, and the relationships developed between players as well as their effect on the team (Patsiaouras, *et al.* 2017).

Also, many players feel anxious and stressed by the presence of spectators and even more so by the presence of parents, siblings and friends, possibly due to the expectations of "*significant others*" (Patsiaouras, 2020b). In general, anxiety results from the negative thoughts of the players and their attention on possible negative results that in turn leads to self-esteem and performance issues. On the other hand, complete apathy also has negative effects on the performance of the players (Vallerand, Colavecchio, & Pelletier, 1988).

However, until now very little is known about the different expressions of anxiety during a volleyball game such as anxiety control, aggression, vulnerability and impulsiveness etc. As Patsiaouras (2021a) pointed out, there is an obvious need to investigate the effect of anxiety of volleyball players and its relationship with their resilience level.

Based on what has previously been discussed, the purpose of this study was to assess the effect of anxiety on volleyball players' resilience. In particular, to examine how each athlete experiences a stressful situation individually and the impact that anxiety has on resilience depending on the participants' gender.

On reviewing the content, it seems that this study is one of the first ever conducted having such a purpose within volleyball context, supporting the necessity and novelty of this research. Considering the heterogeneous findings on the effect of gender on anxiety–resilience relationship as well as the absence of relative studies (Englert & Seiler, 2020; Patsiaouras. 2021a,b), this study has been treated as exploratory.

MATERIALS AND METHODS

A non-probability sample of 195 Greek volleyball players was collected online through snowball sampling (exponential Non-Discriminative Snowball Sampling), using questionnaires with the help of Google Docs due to Covid- 19 restrictions. All athletes had to be active volleyball players prior to the Covid-19 pandemic, as a participation criterion of this study.

Participants
This study involved 195 participants aged 14-52 years (M = 21.55, SD = 6.29), all volleyball players participating prior to the Covid-19 restrictions, were participants in official championships organized by the Greek Volleyball Federation. An overrepresentation of women (81%) was observed in the sample and a mean age of 20.60 years was reported (M = 20.60, SD = 6.04) compared to men volleyball players (19%) with a mean age of 24.49 (M = 24.49, SD = 8.29). All volleyball players had spent sufficient years of training and/or playing volleyball and participated in teams of several volleyball categories from regional teams up to First League category teams and the National team (Table 1). Prior to the online completion of study questionnaires, all participants were informed about their research participation and were assured that the completion of the questionnaires were anonymous and confidential. The completion time of the online questionnaire using Googles Forms lasted approximately 10 minutes. All participants were informed that their participation was voluntary and they were free to withdraw from the research procedure any time they wanted. The study was approved by the Ethical Committee of the University of Thessaly /DPESS.

Table 1. Demographic data of the volleyball players participating to the study.

Gender	N	Mean age	SD	Mean experience*	SD	Mean playing years	SD
Males	37	24.49	8.29	11.57	5.88	10.38	5.54
Females	158	20.87	5.53	9.42	6.39	7.139	5.26

*Note. * training experience in years.*

Statistical analysis

Statistical analysis was carried out using SPSS v21.0. Data analysis included the use of t-test for independent samples to examine any possible differences according to gender (male-female volleyball players) for each factor tested. Descriptive statistics were also included and Cronbach's coefficient alpha was used to examine the internal consistency of each factor, along with Pearson' (r) to test the inter-correlations between factors. The alpha level for statistical significance was set at $p < .05$ for all tests.

Measuring instrument

Resilience was measured using the Self Evaluation Resilience test (http://www.resilience-project.eu/), which is an approved valid and reliable questionnaire used in many relevant studies [Leontopoulou, 2008; Patsiaouras, 2020; Patsiaouras & Stirbu, 2020; Patsiaouras, 2021a; b). The self-evaluation questionnaire consists of 21 questions – 3 for each of the seven categories (variables). The seven variables are: a) "*perception*" of how a person focuses on the present making the best for here and now and finding the balance between the past- the present- and the future-oriented thinking (e.g. Q1: I believe that my life is meaningful and worth living), b) "*getting a grip of one's life*", that is, how to manage one's life and how to find own coping strategies to master stress, obstacles and problems and become aware of positive aspects (e.g. Q2: I approach things (pleasant and unpleasant) and take action), c) "*forming relationships*", referring to resilience and wellbeing as a result of sharing with others (e.g. Q3: I have faith in others and I can rely on their support when I need it), d) "*acceptance and optimistic thinking*" (confidence in future), related to thinking skills that foster resilience in daily life (e.g. Q2: I evaluate my experiences and learn from mistakes as well as successes), e) "*orientation on solution and aims*", to get away from problem thinking and developing thinking skills that enable solutions (e.g. Q3: I have goals for my life and they are consistent with my values), f) "*healthy lifestyle*", related to the approach which keeps one physically and mentally healthy to empower one's resilience (e.g. Q3: In a difficult situation, I put my own health before the expectations of others), and g) "*self-efficacy*", of getting to know one's strengths and using one's own resources in everyday life (e.g. Q3: I believe in myself). Answers were given at a 10-point Likert rating scale (1: total disagree-10: total agree).

The Greek version of CSAI-2 (Tsorbatzoudis, Barkoukis, Sideridis, & Grouios, 2002) proved to be a valid measurement tool in testing anxiety in Greek athletes, which was also used to test the anxiety of the volleyball players. The CSAI-2 Greek version measures cognitive anxiety (8 items), somatic anxiety (8 items) and self-confidence (5 items). Previous factor analyses confirmed that the Greek version of the questionnaire demonstrates very good psychometric characteristics regarding cognitive and somatic anxiety and pointed out the difficulties in measuring self-confidence. Nevertheless, many studies have confirmed a high internal consistency of the questionnaire the alpha values varying between $\alpha = .74$ and $\alpha = .91$ (Tsorbatzoudis, Barkoukis, Sideridis, & Grouios, 2002). Participants respond on a 4-point scale that ranges from 1 ("*not at all*") to 4 ("*very much*").

RESULTS

Reliability analysis was conducted using Cronbach's coefficient alpha, revealing an internal consistency ranging from moderate-good ($\alpha = .61$) to high ($\alpha = .88$) for "*forming relationship*" and "*self-efficacy*" variables

respectively for the resilience questionnaire, as well as a high internal consistency for all variables of the CSAI-2 Greek version (Table 2).

Table 2. Reliability analysis of the factors.

Variables	Cronbach's α
Perception	.703
Getting a grip of one's life	.737
Forming relationships	.607
Acceptance and optimistic thinking	.726
Orientation on solution and aims	.793
Healthy lifestyle	.730
Self-efficacy	.883
Cognitive anxiety	.870
Somatic anxiety	.809
Self-confidence	.873

Correlation analysis (Pearson's r) revealed moderate positive and negative intercorrelations up to weak inter-correlation between variables (Table 3). All resilience variables intercorrelated positively between each other as expected. Note that the volleyball players were not aware of somatic anxiety, an expected outcome due to the characteristic of volleyball with no physical contact between the opponents. Interestingly enough, self-confidence correlates positively with all resilience variables, a finding that should be further investigated in the future (Table 3).

Table 3. Intercorrelation of the resilience variables and CSA-2 Greek version variables.

Variables	1	2	3	4	5	6	7	8	9	10
1. Perception	-	.665**	.229**	.584**	.550**	.515**	.504**	-.234**	-.086	.295**
2. Getting a grip of one's life		-	.218**	.627**	.632**	.490**	.505**	-.135	-.022	.360**
3. Forming relationships			-	.356**	.198**	.332**	.219**	-.116	-.052	.168*
4. Acceptance and optimistic thinking				-	.640**	.558**	.580**	-086	-.001	.311**
5. Orientation on solution and aims					-	.547**	.543**	-.102	-.030	.344**
6. Healthy lifestyle						-	.581**	-.120	-.082	.289**
7. Self-efficacy							-	-.324**	-.267**	.487**
8. Cognitive anxiety								-	.728**	-.343**
9. Somatic anxiety									-	-.136
10. Self-confidence										-

*Note. * $p < .050$, **$p < .010$.*

Descriptive statistics of the resilience and CSAI-2 variables and t-test results between male and female volleyball players are shown in Table 4.

The results of t-test procedure showed statistically significant differences between the groups in ''forming relationships'' variable in favour of female ($p \le .002$) volleyball players and self-efficacy in favour of male volleyball players ($p \le .024$). It seems that female volleyball players focus more on the wellbeing of the team and sharing with the teammates compared to male volleyball players, but on the other hand male volleyball players exhibited higher levels of self-efficacy compared to females, indicating that male athletes seem to

know their strengths and ways to use their own resources in everyday life better, compared to female volleyball players. No other statistically significant gender differences were observed in the rest resilience factors.

In addition, statistically significant differences were observed between the two genders in cognitive anxiety ($p \leq .011$), somatic anxiety ($p \leq .005$) and self-confidence ($p \leq .004$) in favour of the male volleyball players (Table 4). It seems that female volleyball players are less effective in coping with situations in volleyball that produce anxiety compared to males.

Table 4. t-test between the two genders (females N = 158, and males N = 37) for resilience and CSAI-2 variables of study participants.

Variables	Gender	Mean	SD	t	df	p
Perception	Males	23.92	4.67	-.437	193	.662
	Females	24.27	4.26			
Getting a grip of one's life	Males	24.38	4.41	-.420	193	.675
	Females	24.70	4.08			
Forming relationships	Males	25.62	4.03	-3.05	41.12	.002
	Females	27.71	2.19			
Acceptance and optimistic thinking (confidence in future)	Males	24.51	3.30	-.702	193	.483
	Females	24.97	3.60			
Orientation on solution and aims	Males	25.27	3.80	-.002	193	.998
	Females	25.27	4.21			
Healthy lifestyle	Males	25.05	3.46	-.571	193	.569
	Females	25.48	4.15			
Self-efficacy	Males	27.24	2.90	1.98	193	.024
	Females	25.88	3.92			
Cognitive anxiety	Males	8.81	4.62	-2.32	193	.011
	Females	10.68	4.36			
Somatic anxiety	Males	7.16	2.93	-2.56	193	.005
	Females	8.94	3.96			
Self-confidence	Males	16.32	3.10	2.65	193	.004
	Females	14.49	3.22			

*Note. * p < .050.*

DISCUSSION

The purpose of the study was to examine the relationship between the resilience and anxiety of volleyball players and detect possible differences existing between the two genders.

Results showed that all resilience variables intercorrelate positively, with a medium or high positive linear relationship noticed between those variables as expected. This finding is in line with Patsiaouras study (2021a) reporting a similar positive strong relationship between resilience variables. Cognitive anxiety had a significant positive linear relationship with somatic anxiety and both variables correlated negatively with a medium to small linear relationship with self-confidence. In addition, all resilience variables correlated positively and similarly with self-confidence, all findings should be further investigated in future studies.

Statistically significant differences were observed between males and females for "*forming relationships*" variable in favour of female volleyball players, an interesting finding that shows females focusing not only on relationships formed among teammates as the right choice, but they are willing to further make this choice work and seek for their teammates support more, as compared to male volleyball players. This finding in in line with the results of Patsiaouras (2020a). Interestingly enough, no statistically significant differences were observed in other tested variables, whereas other previous studies found statistically significant differences existing between the two genders "*orientation on solution*" (Patsiaouras, 2021a, b), and "*healthy lifestyle*" variables (Patsiaouras, 2021b). Possible reasons could be looking on the methodology for the selection of study sample, the age of the participants and maybe the nature of the resilience questionnaire that assess resilience as a state characteristic.

As for "*self-efficacy*" finding suggested strongly that it is affected by gender as Patsiaouras and Stirbu (2020), Patsiaouras (2020a) and Patsiaouras (2021a,b) highlighted in their studies too. It seems that male volleyball players are able to develop and use effective strategies not only in volleyball but in everyday life too, compared to female volleyball players. Findings suggest that the contribution of age maturation (age levels), team category, training experiences and the differentiation of resilience factors should be further investigated.

As for anxiety, results revealed statistically significant differences observed between the two genders in favour of male volleyball players. Data findings are in line with the study of Englert and Seiler (2020) suggesting that male volleyball players can cope better with perceived anxiety (cognitive and somatic anxiety) than female volleyball players as well as exhibit higher self-confidence in their abilities.

CONCLUSION

The results of this study shows that volleyball coaches should focus more on gender differences in the resilience level without, however, overlooking the anxiety levels of the players.

Female volleyball players are more oriented to forming relationships with teammates which may contribute to a better cohesion in the team but they are less able to develop effective self -efficacy strategies and achieve their self-efficacy goals compared to males. Furthermore, it appears that it was easier for male volleyball players to deal with cognitive and somatic anxiety compared to female volleyball players and appeared more self- confident compared to females. Volleyball coaches should take into account these findings and further adopt, develop and practice elements that can help volleyball players to increase resilience levels and, for females, to cope better with anxiety and in turn to additionally optimize the technical and tactical capacity of their team.

Limitations of the study
The participants and sample size that included only volleyball players along with the relatively small number of studies investigating resilience and anxiety in volleyball were the major limitations of the present study.

Although the findings should be interpreted with caution, this study has several strengths. One of the strengths of this study is that it represents a comprehensive examination of the resilience level and its relationship with anxiety among a large number of volleyball players. The study provides an in-depth view of the topic of resilience and anxiety and the differences existing between the two genders in volleyball that can be generalized in volleyball teams. Another strength of the present study is that the data can relatively be easily analysed by the coaches who might want to evaluate resilience and anxiety levels of their volleyball players.

AUTHOR CONTRIBUTIONS

Patsiaouras A.: writing whole sections of the paper, design of the study, material collection, statistical analysis, results, discussion and conclusions. Boziou E.: contribution to literature research -introduction, material collection, contribution to discussion and conclusions. Kontonasiou D.: literature research, material collection.

SUPPORTING AGENCIES

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

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