



Assessing Resilience in Youth (U16) Volleyball National Teams

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Abstract: The objective of this study was to investigate the resilience of youth high level volleyball players. Forty-eight volleyball national team players U16 from Greece and Romania participated to the study (18 females and 30 males). The Self Evaluation Resilience test was used for the study. The data were analyzed with SPSS 21.0 using one-way ANOVA with post hoc Bonferroni adjustment test. Results showed statistically significant differences between the males and females national team volleyball players in variables "healthy lifestyle" and "self-efficacy". It was concluded that coaches and volleyball players should recognize that female's volleyball players focused more in healthy life style and having less self-efficacy comparing to same aged male's volleyball players.

Keywords: Mental toughness, Resilience, High Level Volleyball, Volleyball National Teams



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1. Introduction

Researchers recently attempted to provide a proper definition on mental toughness [1]. However, mental toughness is still one of the most overused but least understood terms within applied sport psychology leading to conceptual clarity problems [2].

The general consensus in the respective literature suggests that the emphasis and type of mental toughness appears to vary across the stages of sport participation, with each phase influenced by different individuals and factors in and outside of direct sport involvement.

Research suggests that the ability to persevere and overcome impediments is a key component in helping high level athletes to achieve their goals. Furthermore, according in their study found that elite beach volleyball player using of coping strategies to overcome problems settings gals, motivation and staying concentrated during competition having a significant impact on the development of a resilience profile in elite beach volleyball players [3].

First of all, we have to distinguish between mental toughness as an alternative and resilience. Jones, Hanton, and Connaughton [2] defined mental toughness as having the natural or developed psychological edge, as well as addressed two fundamental issues surrounding this concept. The first one refers to someone being able to cope better than their opponents with a variety of demands, such as competition, training and lifestyle, while the latter enables them to be more consistent and better than their opponents in remaining determined, focused, confident, and in control under pressure. Furthermore, Crust [1] found that mental toughness is the most vital psychological attribute in determining competitive success.

With regards to characteristics of mentally tough performers, Jones, Hanton, and Connaughton [2] identified 12 attributes consisting of self-belief, desire/motivation, dealing with pressure and anxiety, performance-related and lifestyle focus, as well as pain/hardship factors. The top three ranked attributes were found to be; (1) self-belief in their ability to achieve their competition goals, (2) increased determination to succeed, and (3) self-belief in their abilities that make them better than their opponents.

According to Wagstaff, Sarkar, Davidson, and Fletcher [4], resilience is the ability to recover quickly from difficulties". This describes an ability to recover from an adverse and difficult situation partially or total. This does not lead to positive feeling about coping successfully with the difficult situation it just means for an example that a volleyball player after having a block point from the opponent he or she is going to do his/her best to achieve some or all of their goals. On the other hand, mental toughness is can be viewed as a personality trait which determines in large part how individual in general deal with stress, pressure and challenge irrespective of circumstances. Although some people seem to have an innate predisposition that contributes to the development of mental resilience, for example being extroverted and social [5] most of the characteristics associated with mental toughness can be a product of the learning process [6]. Additionally, as pointed out by Bonanno and Mancini [7], being mental toughness is driven by characteristic qualities, attitudes and behaviors

A mentally tough volleyball player sees challenge and adversity as an opportunity for development in the sport and not as a threat. In addition, he/she has the self-confidence and a positive approach to take what comes in his/her stride [8].

Resilience and Mental Toughness are connected to each other [9]. In general, elite volleyball players are mentally tough individuals and are resilient but actually not all resilient volleyball players are mentally toughness. The difference lies in the positive component [10]. Thus, a volleyball player who is resilient without being optimistic and having self-confidence can be resilient but may find it difficult and may be more likely to drop-out if the requirement in a team or in games are too frequent or too sustained [11,12].

Therefore, it arises the question why it is important for a volleyball player to be resilient or mental tough Because according to Morgan, Fletcher and Sarkar [8], there is a need to investigate for our better understanding, how teams such as national volleyball teams can sustain optimum performance under pressure. Sarkar and Fletcher [13], assume that both resilience and mental toughness are developed through experiential learning., and they can be positively influenced though targeted development, coaching or simply living through life's experiences. For elite athletes like volleyball players from a national team, adopting a positive mindset is important because they have to feel comfortable in their own skin and accepting losing or winning important games as part of the process for their personal development in volleyball [11]

The purpose of our study was to investigate the resilience in youth national team volleyball players (U16). A self-evaluation Questionnaire was used to evaluate the resilience of sports participants. Although the last decade a plethora of studies has investigated the relation between mental toughness, resilience and sport participation in elite athletes, there is still little evidence on outcome measures in high level volleyball players.

2. Methods

2.1 Statistical Analysis

Statistical analysis was carried out using SPSS v21.0. The data were analyzed using one-way ANOVA in order to examine any differences according to team type (Greek-, Romania- National Team males, and Greek National team females) of this sample for each factor tested and post hoc test with Bonferroni adjustment. Cronbach's coefficient alpha was used to examine the internal consistency of each factor and Pearson' (r) in order to test the inter-correlations between the factors. The alpha level for statistical

significance was set at $p < .05$ for all tests. Descriptive statistics were also included.

2.2 Measuring instrument

In order to measure resilience, the Self-Evaluation Resilience test was used (<http://www.resilience-project.eu/>), which is a valid and reliable questionnaire in order to test resilience [14]. The self-evaluation questionnaire consists of 21 questions – 3 for each of the seven categories or areas of development (variables). The seven variables are: a) “perception” which refers of how someone focus in 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” which refers of how to manage one’s life 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” which refers to resilience and wellbeing as a results 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) which refers 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 which refers on getting 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” which refers on 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” which refers on getting to know one’s strengths and the possibility of 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).

2.3 Participants

This study involved 48 participants aged 14-16 years all members of their National volleyball teams (Under 16), 15 males of Greek national volleyball team aged 14-16 years ($M=14.87$, $SD=.52$), and 15 players of Romanian national volleyball team aged 14-16 years ($M=15.53$, $SD=1.03$), and 18 females aged 14-16 years ($Mean=15.61 \pm .78$) of the Greek volleyball

national team. Prior to the study, the participants gave their consent for participation in the research, whereas they were assured that the completion of the questionnaires were anonymous and confidential. The participants completed a questionnaire on the training ground prior or after their training, with completion time of the questionnaire being approximately 10 minutes after which the questionnaire was placed in a sealed box. All participants were informed that their participation was voluntary and they were free to withdraw from the research procedure any time they felt so. The study was approved by the Ethical Committee of the University of Thessaly /DPESS.

3. Results

Reliability analysis using Cronbach’s coefficient alpha revealed an internal consistency ranging from moderate-good ($\alpha = 0.62$) to high ($\alpha = 0.87$) for the factors of “acceptance and optimistic thinking (confidence in future) and self-efficacy respectively. Moreover, Pearson r analysis revealed positive correlations between all factors (Table 1).

Using the team difference patterns males Greek Volleyball National team, males Romanian Volleyball National team and female’s Greek Volleyball National team, one-way ANOVA test results showed statistically significant differences between the groups in variables healthy life style in favor of females ($p \leq 0.001$) volleyball players and self-efficacy in favor of males volleyball players ($p \leq 0.050$). No statistically significant differences were observed between the males and the female’s volleyball players. In addition, no statistically significant differences were observed between the two different males’ National teams (Greek and Romanian) in all tested variables (Table 2).

No statistically significant differences were observed in the variable “perception” which examine how someone focus in present making the best for here and now and finding the balance between the past- the present- and the future-oriented thinking. This variable is very important for volleyball players who have to try making his/her best in a game for e.g. despite losing the first set from the opponent player should remain concentrated on the strategic of the team for the next set in order to win. As pointed out Belem, *et.al.*, [3] the perception of a positive results after overcoming obstacles helps players to persist with a goal.

Table 1 Internal consistency and correlation of factors

Variable	1	2	3	4	5	6	7	Cronbach's
								α
1.Perception	-	0.60**	0.39**	0.41**	0.48**	0.24	0.52**	0.75
2.Getting a grip of one's life		-	0.21	0.52**	0.68**	0.31*	0.54**	0.67
3.Forming relationships			-	0.45**	0.27	0.27	0.06	0.68
4. Acceptance and optimistic thinking (confidence in future)				-	0.69**	0.48**	0.44**	0.62
5. Orientation on solution and aims					-	0.33*	0.62**	0.85
6. Healthy lifestyle						-	0.20	0.86
7.Self-efficacy							-	0.87
							Total	0.88

* $p < 0.050$ ** $p < 0.001$ **Table 2** ANOVA of resilience variables with statistically significant results

Variables	Groups ¹	SS	Df	MS	F	p	η^2
Perception	Between groups	2.05	2	1.02	0.101	0.904	0.124
	Within groups	455.43	45	10.12			
	Total	457.48	47				
Getting a grip of one's life	Between groups	17.38	2	8.69	0.643	0.531	0.289
	Within groups	455.43	45	13.52			
	Total	457.48	47				
Forming relationships	Between groups	44.97	2	22.48	1.655	0.203	0.226
	Within groups	611.51	45	13.59			
	Total	656.48	47				
Acceptance and optimistic thinking (confidence in future)	Between groups	35.85	2	17.92	1.415	0.254	0.319
	Within groups	570.13	45	12.67			
	Total	605.98	47				
Orientation on solution and aims	Between groups	14.20	2	7.10	0.413	0.664	0.219
	Within groups	773.18	45	17.20			
	Total	787.98	47				
Healthy lifestyle	Between groups	373.21	2	186.60	13.62	.000***	0.530
	Within groups	616.71	45	13.71			
	Total	989.92	47				
Self-efficacy	Between groups	83.20	2	.41.60	2.538	0.045*	0.304
	Within groups	737.61	45	16.39			
	Total	820.81	47				

¹ a. Greek Volleyball National Team (Males=15), b. Romania Volleyball National Team (Males=15), c. Greek Volleyball National Team (Females=18)

*Significant at 0.050 level

***Significant at 0.001 level

Table 3 Arithmetic means, standard deviations and Bonferroni 's post hoc test for statistically significant results

Variables	Groups *	M	SD	Post hoc test (Bonferroni)**
Perception	a. Greek N. Team males b. Romanian N. Team males c. Greek N. Team females	24.67 24.40 24.17	1.88 2.50 4.33	
Getting a grip of one's life	a. Greek N. Team males b. Romanian N. Team males c. Greek N. Team females	26.07 24.60 25.00	1.91 4.27 4.21	
Forming relationships	a. Greek N. Team males b. Romanian N. Team males c. Greek N. Team females	27.53 25.33 25.56	2.56 4.12 4.08	
Acceptance and optimistic thinking (confidence in future)	a. Greek N. Team males b. Romanian N. Team males c. Greek N. Team females	26.13 24.20 24.33	2.07 3.19 4.65	
Orientation on solution and aims	a. Greek N. Team males b. Romanian N. Team males c. Greek N. Team females	26.53 25.93 25.22	3.56 3.45 5.02	
Healthy lifestyle	a. Greek N. Team males b. Romanian N. Team males c. Greek N. Team females	26.00 20.60 27.22	1.96 5.40 3.02	c- a (p=0.000) c - b (p=0.000)
Self-efficacy	a. Greek N. Team males b. Romanian N. Team males c. Greek N. Team females	27.80 26.07 24.11	2.01 3.90 5.25	a - c (p=0.044) b - c (p=0.044)

No statistically significant differences were observed between the teams in variable "getting a grip of one's life" which means that both gender and players from Greek National volleyball team and the Romanian National volleyball team were able to manage problems in their life equal effectively and find coping strategies to master stress, obstacles and problems during training and games agreed with the finding of Belem, *et. al.*, [3] this variable is a fundamental psychological factor of protection for the development of resilience.

Despite the evidence that many team resilience research recognizes the particular importance of relationships, but the most definitions do not refer to team resilience as a shared, collective, and psychosocial phenomenon [8] no statistically significant difference were observed for the variables "forming relationships" that means every volleyball players of the study perceived their situation positive to resilience and Well- being as a results of sharing with others team members, for the variable "acceptance and optimistic thinking" that mean that every volleyball players expressed their confidence in future and their

thinking skills that foster resilience in daily life, and for the variable "orientation on solution and aims" means that they getting easily away from problem, and they are able to develop thinking skills that enable solutions in difficult situations either in training or in a volleyball game

Using descriptive statistics from the statistical software SPSS 21.0 for the resilience variables results between the male and female volleyball players is shown in table 3.

Bonferroni correction revealed statistically significant differences in variable "healthy lifestyle" between the Greek females National team volleyball players and the Greek males National team volleyball players (I-J=6.40, SD=1.35, p=0.000) and between the Greek females National team volleyball players and the Romania males National team volleyball players (I-J=5.62, SD=1.29, p=0.000), (Table 3). The variable "healthy lifestyle" refers on the approach which keeps one physically and mentally healthy to empower one's resilience between the females and males national team volleyball players. It seems that the females are

more oriented and seeking a healthy life style at that age comparing to the males same aged volleyball players. Thus, findings regarding gender differences in achievement goal orientations and attributive style have somewhat inconsistent [15] and therefore more studies are needed in order to investigate them.

Furthermore Bonferroni correction revealed statistically significant differences in variable "self-efficacy" between the Greek males National team volleyball players and the Greek females National team volleyball players ($I-J=3.19$, $SD=1.42$, $p=0.044$) and between the Romania males National team Volleyball players and the Greek females National team volleyball players ($I-J=3.73$, $SD=1.48$ $p=0.044$) (table 3). This variable, "self-efficacy" refers on getting to know one's strengths and the possibility of using one's own resources in everyday life between the females and males National team volleyball players. It seems that the females are less confident in their abilities and skills leading them to be efficacy in training and games comparing to males' National team volleyball players.

According to [16] there is a significant relationship between Mental Toughness with gender, age, and sport experience. Therefore, more studies are needed in order to clear how volleyball experience affects resilience in different gender and age levels.

Future studies should investigate more the difference in the above-mentioned variables between the two genders using for e.g. more participants and not limited at the age (U16) which was the participants of this study. There is a need on applying interventions primarily focused on developing optimism skills and coping strategies in volleyball in line with the suggestions of [3, 17]. It would be particularly interesting to study the role that coaches play in creating a more positive environment helping to develop the resilience level of volleyball players, since it is very important to notice that most volleyball coaches in general are only (either active or not) older volleyball players without knowledge of sports psychology issues and that is a common issue in many sports [18].

The study of resilience of young volleyball players constitutes a new element of the current psychological research in this sport creating a wide range of research interests. It would be also interesting to study the adult's players' resilience level since volleyball rises up as an attractive and interesting pastime activity for adults during the last years. Furthermore, it could be beneficially for the coaches if

they do know the resilience level between top-class players and novice players practicing volleyball in order to improve their physical condition and overall health. This could help to acquire a more complete idea about the present state of volleyball team's data and the strategies that promote the creation of positive resilience levels in volleyball.

4. Conclusions

The purpose of the study was to assess the resilience levels of youth national team volleyball players. No statistically significant differences were observed for the variables "perception", "getting a grip of one's life", "forming relationships" "acceptance and optimistic thinking", and "orientation on solution and aims". Statistically significant differences were observed in variable "healthy lifestyle" which refers on the approach which keeps one physically and mentally healthy to empower one's resilience between the females and males national team volleyball players. It seems that the females are more oriented and seeking a healthy life style comparing to the males same aged volleyball players. Statistically significant differences were observed in variable "self-efficacy" which refers on getting to know one's strengths and the possibility of using one's own resources in everyday life between the females and males National team volleyball players. It seems that the females are less confident in their abilities and skills leading them to be efficacy in training and games comparing to males' National team volleyball players. Therefore, more studies are needed in order to clear how volleyball experience affects resilience in different gender and age levels. Furthermore, it would be particularly interesting to study the role that coaches play in creating a more positive environment helping to develop the resilience level of volleyball players, and to know the resilience level between top-class players and novice players practicing volleyball in order to improve their physical condition and overall health.

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Conflict of interest

The authors declare that they have no actual or potential conflict of interest, including financial, personal or other relationships with people or organizations that could have inappropriately influenced this work.

Informed consent

All participants gave written informed consent to participate in this study.

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