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Resilience, Risk-Taking Behavior and Aggression among Female Volleyball Players – a Preliminary Study

Radu Predoiu,[1] Doina Croitoru,[1]* Andrada Raluca Isac,[2] Ionuț Patenteu,[3] Corina Ciolcă,[1] Dan Badea,[1] Adina Geambașu,[1] Alexandru Ilie[4]

[1]National University of Physical Education and Sport, Romania

[2]Ex4 Volleyball Sports Club, Romania

[3]University of Medicine and Pharmacy "Carol Davila", Romania

[4]RestartiX Center, Romania

Abstract

The aim of the current study is to investigate the level of risk-taking behavior, resilience and aggression in female volleyball players and the link between these psychological variables and coach's performance ranking. A Romanian volleyball team ranked 7th out of 11 in the A1 league in the national championship (2022-2023 period) participated at the study. The Romanian adaptation of the Brief Resilience Scale, The Romanian adaptation of Makarowski's Stimulating and Instrumental Risk Questionnaire, The Romanian adaptation of Makarowski's Aggression Questionnaire and Delphi method (evaluation of female volleyball players by coaches) were used. Analysis of the results reveals that athletes have a low level of perseverance (Go-Ahead factor), a low level of Foul play and a moderate to low level of assertiveness. Also, most athletes registered average or even low levels of resilience and have manifested a medium level of instrumental risk and moderate-to low-level of stimulating risk. The existing correlations between the psychological variables examined and the average scores obtained by each athlete (scores offered by the volleyball coaches according to athletes' sport skills in training and competition) were discussed. The results of the study contribute to increase the awareness regarding aggression level, resilience, instrumental and stimulating risk level in Romanian female volleyball players, a less addressed topic.

Keywords: Resilience, Aggression, Risk-taking behavior, Volleyball

Introduction

Resilience, risk-taking behavior and aggression in sport have been topics of interest to researchers, sport psychologists, coaches and athletes. For example, risk-taking behavior and aggression have been investigated in relation to sport skills,[1] in cross-cultural studies[2,3] or as psychological variables influencing the severity of athletes' injuries.[4,5]

Psychological resilience in sport

When talking about resilience in sport, we mention the Sporting resilience meta-model,[6] where the biopsychosocial protective filter influences the impact of the adversity (according to the resources available), generating a minimum or an important disruption in athletes. Resilient athletes may return to their previous level of performance after a disruption, while less resilient athletes may expe-

*Corresponding author: Doina Croitoru, Professor PhD, National University of Physical Education and Sport, Bucharest, Romania

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rience negative performance followed by further negative results in competitions - their ability to bounce back after failure is lower.[7] Researchers are discussing about „growth following adversity in competitive sport".[8] Motivation, focus, positive personality, perceived social support and confidence represent dimensions that protect athletes from distress.[9] Such dimensions/ variables „promote facilitative responses that precede optimal sport performance".[10] Resilience is very important in sport (which is a stress-generating environment[11]), athletes having to deal with/ withstand the mental pressure they experience. Psychological resilience was investigated among various competitive athletes, including volleyball players.[12]

Explicit aggression

On the term *aggression*, authors refer to a person's way of reacting that involves verbal or physical aggressive stimuli, an activity intended to generate pain and destruction.[13] In sporting activity, however, aggression is usually valued, having a positive connotation,[14] often bringing victory to the team/ athlete displaying it. Instrumental aggression and hostile aggression were distinguished.[15] In sport activity aggression is usually instrumental, being within the limits of the rules and directed towards clear objectives (e.g. powerful ball shots in volleyball that lead to domination in a competition, blocking an opponent in basketball, technical executions that bring success in combat sports, etc). When athletes' aggression is measured using questionnaires (as in the present study) we refer to explicit aggression. But human behavior is guided by both explicit and implicit processing,[16] implicit aggression referring to automatic processes that can be assessed with indirect measurement tools (e.g., Implicit Association Test - IAT).[17]

Investigating the level of aggression in team and individual sports, the researchers found no evidence of a significant difference between the groups.[18] Considering volleyball, it was used to reduce aggression level of adolescents, after-school small-sided volleyball being accompanied „by a significant decrease in aggression compared to physical education classes only".[19]

Instrumental and stimulating risk

Risk-taking behavior refers to intentional behavior that could result in a gain or loss for the individual[2]. Performance sport involves different types of risks, such as the risk of injury or risks related to wrong decisions – it seems that the risk of making a wrong decision in sports increases as distress/ the psychological pressure felt by athletes, also, increases.[20]

In the literature we highlight instrumental risk and stimulating risk. The first is controlled, calculated (it manifests in people who have a higher level of self-control), being the result of informed decisions.[21] Instrumental risk facilitates appropriate behavior (strategy, tactics) to achieve the set goal. Instrumental risk takers (generally) exhibit analytical and rational thinking.[2,22] In contrast, in the case of stimulating risk, the behavior is oriented towards experiencing a pleasant physiological state. This type of risk is not preceded by an analysis of possible losses, individuals manifesting a greater need for stimulation (being more adrenaline seeking). Stimulating risk is linked to low self-control and impulsive behavior - it is the mere participation in the risky situation that counts (not possible losses). The emotional processing system dominates, the person looking for intense emotions.[23] With respect to the game of volleyball we emphasize a gap in the literature regarding athletes' level of instrumental and stimulating risk.

Methodology

Scope

The aim of the research is to investigate the level of resilience, risk-taking behavior and aggression in senior female volleyball players and the link between these psychological dimensions and coach's performance ranking (taking into account athletes' sport skills/ technical-tactical abilities).

Objectives

- Identifying the level of resilience, risk-taking behavior and aggression in national level volleyball players.
- Knowing the link between resilience, risk-taking behavior, aggression and the players' sport performance (translated through the coaches' grade according to the volleyball players' sport abilities in training and competition).

Research questions

1) What are the associations between resilience, risk-taking behavior, aggression and the sport skills/ competency of volleyball players?
2) What is the level of aggression (Go-Ahead, Foul play and Assertiveness), risk-taking behavior (instrumental and stimulatting risk) and resilience in female volleyball players, taking into account the average results - according to the norms?

Participants

The research included 14 female volleyball players, representing a Romanian volleyball team ranked 7th out of 11 in the A1 league in the national championship (2022-2023 period). It should be noted that in Romania there are also A2 West and A2 East divisions (lower value groups) for senior women. Female athletes are aged between 18 and 39 (M_{age} = 23.71).

Measurements

1) The Romanian adaptation of the Brief Resilience Scale (BRS)

The questionnaire consists of six items to which participants can answer by choosing a response option from 1 to 5, where 1 is Total Disagreement and 5 is Total Agreement. The scale comprises three direct scoring items and three reverse scoring items.

Item example: „I tend to bounce back quickly after hard times".[24] The BRS in its Romanian adaptation „revealed adequate fit-indexes", and „suitable values were also obtained for reliability and convergent validity".[25]

2) The Romanian adaptation of Makarowski's Stimulating and Instrumental Risk Questionnaire[2]

The questionnaire consists of eight items (four items measuring the instrumental risk, and four the stimulating risk), to which athletes answered by choosing a response option from 1 to 5, where true = 5; rather true = 4; difficult to say = 3; rather not true = 2; not true = 1.

Item example for instrumental risk: „I take the risk only when it is necessary to reach my goal".

Item example for stimulating risk: „When I pursue my passions, I like the moments of balancing on the edge of risk".

3) The Romanian adaptation of Makarowski's Aggression Questionnaire[3]

The questionnaire consists of 15 items and can be used to measure the level of manifestation of three factors of aggression: Go-Ahead, Foul play and Assertiveness (there are five items for each factor). Athletes answered by choosing a response option from „a" (1 point) to „e" (5 points) as follows: a = Definitely NOT; b = Rather NOT; c = Difficult to say; d = Rather YES; e = Definitely YES.

Go-Ahead refers to an athlete's ability to achieve their goal despite possible obstacles. This trait characterises individuals who get what they want, sometimes regardless of the cost. Foul play is encountered when an athlete blocks the activities of other athletes, often in an unethical manner. The third factor, assertiveness, is the ability to accept both criticism and compliments, opinions that differ from one's own, to express emotions directly, firmly and without offending others.

Item example for Go-Ahead: „To achieve any goal you need to push forward without paying attention to others".

Item example for Foul Play: „Winning is what counts, no matter how is achieved".

Item example for Assertiveness: „When I think that my coach or supervisor is wrong I tell him that".

4) Delphi method[26] - evaluation of female volleyball players by coaches (experts)

The sports skills (technical-tactical abilities) of female volleyball players were assessed using the Delphi technique. Specifically, three volleyball coaches (two male and one female), having between 5 and 20 years of experience in the field, training (over time) national and international teams, gave a score from 1 to 10 to the athletes (where 1 = very poor, 5 = average and 10 = very good sports skills/technical-tactical abilities), following volleyball players' performance in training and competitions. Each coach followed the female athletes in three training sessions and three official matches, randomly selected. The arithmetic mean of the grades given by the coaches was performed and statistically processed.

Procedure

The study was conducted between November 2022 and March 2023. The questionnaires in this research were administered online via *google forms*. We adhered to ethical principles by obtaining informed consent, treating the data confidentially and ensuring anonymity. Participants were also informed that they were free to withdraw from the study at any time.

Research variables

The dependent variable (DV) is the coaches' rating of the volleyball players' performance (sports skills/ technical-tactical abilities) in training and competition. The variables that play the role of independent variables (IV) are represented by the athletes' results for resilience, instrumental risk, stimulating risk, as well as in the case of the three factors of aggression.

Results

In Table 1 we present descriptive statistical indicators (at group level - female volleyball players) for the three factors of aggression, resilience and risk-taking behavior.

Athletes have a low level of perseverance (Go-Ahead factor), a low level of Foul play, a moderate to low level of assertiveness (according to the norms) and a moderate level of resilience (most athletes scored average or even low on this trait). Volleyball players also show a medium level of instrumental risk and a moderate to low level of stimulating risk. In Figure 1 it can be seen that instrumental risk is higher compared to stimulating risk for most players.

Considering the scores offered by the volleyball coaches (Delphi technique), the athletes obtained values (according to their sport skills/ technical-tactical abilities) between 5 and 8.67 (M = 6.84).

We can say that female volleyball players have slightly above average and good sports skills.

Next, we set out to investigate the extent to which the sport skills of female volleyball players relate to levels of aggression, resilience and risk-taking.

We observe in Table 2 a positive significant correlation (r = 0.567, p = 0.030) between the players' resilience level and the mean scores from the three volleyball coaches – according to athletes' sport skills. In other words, athletes who scored higher on the resilience questionnaire also scored higher on technical-tactical skills/ quality of play. We can argue that higher resilience in female senior volleyball players is associated with better sport skills/ technical-tactical abilities in training and competition (effect size index $r^2 = 0.32$, showing a strong relation between variables).

Regarding the three factors of aggression, no statistically significant relationship was observed between Go-Ahead (r = -0.2, p = 0.493), Foul play (r = -0.418, p = 0.136), Assertiveness (r = -0.222, p = 0.443) and grades given by the volleyball coaches.

Figure 1: Risk-taking behavior in volleyball female players (national level).

At the same time, we found that there is no significant association between stimulating risk (r = 0.129, p = 0.658), instrumental risk (r = -0.088, p = 0.762) and the mean scores received by female volleyball players (from the coaches).

Table 1: Descriptive Statistics - psychological dimensions investigated.

Variables	Min	Max	Range	Mean	SD	SE	Coef. of variation
Go-Ahead	11	20	9	14.9	2.8	0.7	0.18
Foul play	4	13	9	6.92	2.9	0.8	0.42
Assertiveness	9	20	11	14.9	3.5	1	0.24
Resilience	2	4.5	2.5	3.6	0.7	0.2	0.19
Instrumental risk	11	20	9	14.6	3.3	0.9	0.22
Stimulating risk	5	6	10	11.9	3.2	0.9	0.26

Table 2: Correlation between sport skills/ technical-tactical abilities and psychological variables investigated.

Resilience		Spearman's rho	0.567
		p-value	**0.03**
Aggression	Go-Ahead	Spearman's rho	-0.2
		p-value	0.493
	Foul play	Spearman's rho	-0.42
		p-value	0.136
	Assertiveness	Spearman's rho	-0.22
		p-value	0.443
Risk-taking behavior	Stimulating risk	Spearman's rho	0.129
		p-value	0.658
	Instrumental risk	Spearman's rho	-0.09
		p-value	0.762

Last but not least, using a one-sample t-test, we checked whether there are significant differences between the level of aggression (considering the three factors), the level of resilience, of risk-taking behavior (instrumental and stimulating risk) obtained by female athletes and the mean values - according to the norms. We note that the norms for the Romanian adaptation of Makarowski's Instrumental and Stimulating Risk Questionnaire and the norms for the Romanian adaptation of Makarowski's Aggressiveness Questionnaire were conducted on martial arts athletes and are the same for women and men.[2,3] Therefore, we tested for significant differences between the results of female senior volleyball players and the mean values of martial arts athletes.

The mean values are (according to the norms): 19.5 (Go-Ahead), 12.5 (Foul play), 17.5 (Assertiveness), 14.5 (Instrumental risk) and 13.5 (Stimulating risk) Table 3.

The results achieved by national level volleyball players (compared to the norms) are as follows:

- Go-Ahead: t = -6.078, p < 0.001 ($M_{Go\text{-}Ahead}$ = 14.92, *SD* = 2.81);

- Foul play: t = -7.136, p < 0.001 ($M_{Foul\ play}$ = 6.92, *SD* = 2.92);

- Assertiveness: t = -2.839, p = 0.013 ($M_{Assertiveness}$ = 14.85, *SD* = 3.48);

- Instrumental risk: t = 0.163, p = 0.872 ($M_{Intrumental\ risk}$ = 14.64, *SD* = 3.27);

- Stimulating risk: t = -1.931, p = 0.075 ($M_{Stimulating\ risk}$ = 11.85, *SD* = 3.18).

Significant differences can be observed between female volleyball players and martial arts practitioners (mean values) when talking about: Go-Ahead, Foul play and Assertiveness. Female volleyball players obtained significantly lower scores for all the mentioned variables, compared to the average results of martial arts practitioners.

When talking about resilience the average value is 3.75, according to the norms (general population) Table 4.

In terms of resilience, the results obtained are as follows:

- Resilience: t = -0.905, p = 0.381 ($M_{Resilience}$ = 3.6, *SD* = 0.7).

No significant difference is observed between volleyball players' level of resilience and the mean value in the standard/ according to the norms.

Table 3: Risk-taking behavior and results for aggression - reported to the norms.

	t	p	Skewness	Kurtosis
Go-Ahead	-6.08	< 0.001	0.302	-1.097
Foul play	-7.14	< 0.001	0.902	0.131
Assertiveness	-2.84	0.013	-0.155	-1.236
Instrumental risk	0.163	0.872	0.463	-1.403
Stimulating risk	-1.93	0.075	-0.166	-0.539

Table 4: Female volleyball players resilience results vs. average results (according to the norms).

	t	p	Skewness	Kurtosis
Resilience	-0.91	0.38	-0.618	0.67

Discussion and Conclusion

Volleyball is a sport with both aerobic and anaerobic components, vertical jump and speed being very important characteristics.[27] Also, power and strenght training improve skill performance in volleyball players[28]. Mental features are just as important, researchers investigating, over time, the mental representations of routines among female volleyball players[29] nonverbal communication in real-time volleyball competitions,[30] or state anxiety (which affects more female volleyball players),[31] in relation with sports performance (including the coach's performance ranking). However, aggression, risk-taking behavior and resilience were less related to female volleyball players' sporting abilities.

In the current study, first, we investigated the level of resilience, risk-taking behavior (instumental and stimulating risk) and aggression (Go-Ahead, Foul play and Assertiveness factors) of female senior volleyball players, who play in the first league in Romania and ended the 2022 - 2023 championship in the middle of the ranking (seventh place out of 11 participating teams).

Analysis of the results reveals that athletes have a low level of perseverance (Go-Ahead factor), a low level of Foul play and a moderate-to-low level of assertiveness (according to the norms). In other words, most of the female athletes in the investigated team are not the most perseverant. A reduced level of Foul play is recommended. Volleyball is a sport with no direct contact with the opponent and such a score (for foul play) can show that the team is playing "clean", without resorting to subterfuge to win points. It is common in this sport (volleyball) for players to recognise when they touch the net, when a ball from the opponent falls into the court or when they have made a mistake at the net, even if this means they lose points. Volleyball remains probably one of the sports where players show the least aggression, as it is a team sport without direct contact with the opponent. These results obtained for unethical behavior are in line with the interests of sport and sport psychology specialists focused on promoting effective, desirable and adaptive behaviors in athletes.[32]

The moderate-to-low level of assertiveness could mean that the female players are obedient, that they are afraid to defend their opinions in front of their teammates, but especially in front of the coaches - it would be interesting to see, in the future, other results, in the context of the Romanian national team (for example), but also compared with teams from other countries.

Also, the resilience level was investigated (most athletes registering average or even low levels of this trait). The female volleyball players who participated in the study have a moderate level of resilience (at group level) when faced with stressful situations, with more difficult periods in the competitive year, which means that there is a possibility that they may not perform at their best after a more stressful period.

Not least, athletes exhibit a medium level of instrumental risk and moderate-to low-level of stimulating risk.

Further, we checked whether there were statistically significant correlations between the psychological dimensions examined and the average scores obtained by each athlete (scores offered by the volleyball coaches according to athletes' sport skills in training and competition). The following aspects were highlighted:

- There is a positive significant correlation between players' level of resilience and the average marks/ scores given by the coaches. In other words, volleyball players who scored higher in resilience also scored higher in technical-tactical skills. We could say that higher resilience in female volleyball players is associated with better sport skills during competition and training.

-The data do not show a significant relationship between the three factors of aggression, stimulating, instrumental risk and the sports skills/ technical-tactical abilities of female volleyball players during training and competition.

Last but not least, using a one-sample t-test, we verified whether there are significant differences between the level of aggression, resilience, risk-taking behavior and the mean scores - according to the norms/ standard. Significant differences were observed between the results of female volleyball players and the average results (norms) when we talk about: Go-Ahead, Foul play and Assertiveness. Volleyball players obtained significantly lower scores (compared to average scores) for all the mentioned dimensions. Despite being in the top value league in Romania, the volleyball team under investigation is in the middle of the rankings, and the level of perseverance (Go-Ahead) could be one of the factors explaining why they are not among the top three teams in the country. The biggest difference, compared to the norms, can be observed in the case of Foul play. The volleyball players scored much lower than the average result, which could mean that they are much less willing to prevent other athletes (using unethical means) from achieving the desired results and are far from what we could call an unethical aggressor, which is generally appreciated in volleyball (and in sport).

Female volleyball players are also less willing to say what is on their minds, directly and firmly, in relation to their teammates or coaches (assertiveness factor). Further research would be needed to understand exactly where this tendency comes from. It may be something specific to this team sport, specific to female athletes, or age specific. It may also be a combination of the mentioned factors. It would be interesting to see other results, in the future, in the context of the Romanian national team (for example), but also in the context of other (top) teams abroad.

In terms of instrumental and stimulating risk, female volleyball players do not take significantly higher or lower risks to achieve their goals compared to the average results (norms). No significant differences were observed, also, between athletes' level of resilience, compared to the mean values (norms). Future studies are needed comparing the level of risk-taking behavior and resilience (of female volleyball players in this mid-ranked team in Romania), with the results of volleyball players from top-ranked teams.

The present study has a number of limitations, the most important limitation of the research being the small sample of participants. For future research, we recommend extending the study to other teams, ranked on different positions, to better understand if there is a significant relationship between volleyball players' sport skills during competitions and the level of resilience, risk-taking behavior and aggression. We also see a need to extend the research to men's teams.

The results of the study contribute to increase the awareness regarding the level of manifestation of the three factors of aggression, resilience, instrumental and stimulating risk in Romanian female volleyball players, a less addressed topic.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

1. Predoiu R, Hildebrand A, Makarowski R, et al. Introductive study on risk-taking behavior, aggression and sports ability of golf players from United States. *Journal of Educational Sciences & Psychology.* 2022;74(1):102-112.

2. Makarowski R, Piotrowski A, Predoiu R, et al. The English-speaking, Hungarian, Latvian, Lithuanian, Romanian, Russian, Slovak, and Spanish adaptations of Makarowski's Stimulating and Instrumental Risk Questionnaire for martial arts athletes. *Archives of Budo.* 2021;17:1-33.

3. Makarowski R, Piotrowski A, Görner K, et al. The Hungarian, Latvian, Lithuanian, Polish, Romanian, Russian, Slovak, and Spanish, adaptation of the Makarowski's Aggression Questionnaire for martial arts athletes. *Archives of Budo.* 2021;17:75-108.

4. Patenteu I, Predoiu R, Makarowski R, et al. A-trait and risk-taking behavior in predicting injury severity among martial arts athletes. *Frontiers in Psychology*. 2023;14:1134829.
5. Gallant C, Barry N, Good D. Physiological underarousal as a mechanism of aggressive behavior in university athletes with a history of concussion. *Brain and Behavior*. 2018;8(8):e01038.
6. Gupta S, McCarthy PJ. The sporting resilience model: A systematic review of resilience in sport performers. *Frontiers in Psychology*. 2022;13:1003053.
7. Bejan-Mureşan R, Cînpeanu A. Resilience, stressors and protective factors in sports performance. *Discobolul – Physical Education, Sport and Kinetotherapy Journal, Supplementary Issue(International Proceedings of Human Motricity/ ICPESK 2019).* 2019;p.29-34.
8. Howells K, Sarkar M, Fletcher D. Can athletes benefit from difficulty? A systematic review of growth following adversity in competitive sport. S*port and the Brain: The Science of Preparing, Enduring and Winning, Part B*. 2017;p.117-159.
9. Sarkar M, Fletcher D. Psychological resilience in sport performers: a review of stressors and protective factors. *Journal of Sports Sciences*. 2014;32(15):1419-1434.
10. Fletcher D, Sarkar M. A grounded theory of psychological resilience in Olympic champions. *Psychology of Sport and Exercise*. 2012;13:669–678.
11. Mellalieu SD, Neil R, Hanton S. Fletcher, D. Competition stress in sport performers: Stressors experienced in the competition environment. *Journal of Sports Sciences*. 2009;27:729-744.
12. Rawat S, Deshpande AP, Predoiu R, et al. The Personality and Resilience of Competitive Athletes as BMW Drivers - Data from India, Latvia, Lithuania, Poland, Romania, Slovakia, and Spain. *Healthcare*. 2023;11(6):811.
13. Klimczak J, Podstawski R, Dobosz D. The association of sport and violence, aggression and aggressiveness – prospects for education about non-aggression and reduction of aggressiveness. *Archives of Budo.* 2014;10:273-286.
14. Cashmore E. *Sport and Exercise Psychology*: Routledge; 2008.
15. Silva JM. The perceived legitimacy of rule violating behavior in sport. *Journal of Sport Psychology*. 1983;5(4):438-448.
16. Gawronski B, Bodenhausen GV. Associative and propositional processes in evaluation: an integrative review of implicit and explicit attitude change. *Psychological Bulletin*. 2006;132(5):692.
17. Predoiu R, Makarowski R, Görner K, et al. Aggression in martial arts coaches and sports performance with the COVID-19 pandemic in the background – a dual processing analysis. *Archives of Budo*. 2022;18:23-36.
18. Yetis U. Analysis of Aggression Levels in Individual and Team Athletes. *Studies on Ethno-Medicine*. 2016:10(1);15-22.
19. Trajkovic N, Pajek M, Sporiš G, et al. Reducing Aggression and Improving Physical Fitness in Adolescents Through an After-School Volleyball Program. *Frontiers in Psychology*. 2020;11:2081.
20. Kinrade NP, Jackson RC, Ashford J, et al. Development and validation of the Decision-Specific Reinvestment Scale. *Journal of Sports Sciences*. 2010;28:1127-1135.
21. Zaleśkiewicz T. Beyond risk seeking and risk aversion: Personality and the dual nature of economic risk taking. *European Journal of Personality*. 2001;15(S1):105-122.
22. Zaleśkiewicz T. Review of behavioral game theory. *Polish Psychological Bulletin*. 2005;36:187-188.
23. Makarowski R, Piotrowski A. The psychological profile of pilots of passenger planes: Analysis of temperamental traits, aggression and risk. *Medycyna Pracy*. 2017;68:639-651.
24. Smith BW, Dalen J, Wiggins K, et al. The Brief Resilience Scale: assessing the ability to bounce back. *International Journal of Behavioral Medicine*. 2008;15:194-200.
25. Alexe CI, Alexe DI, Mareş G, et al. Validity and reliability evidence for the Behavioral Regulation in Sport Questionnaire with Romanian professional athletes. *PeerJ.* 2022;10:e12803.
26. Predoiu A. *Metodologia cercetării ştiinţifice – aplicaţii practice şi elemente de statistică neparametrică*: Discobolul; 2020.
27. Smith DJ, Roberts, D, Watson B. Physical, physiological and performance differences between canadian national team and universiade volleyball players. *Journal of Sports Sciences.* 1992;10(2):131-138.
28. Kitamura K, Roschel H, Loturco I, et al. Strength and power training improve skill performance in volleyball players. *Motriz: Revista De Educação Física*. 2020;26(1): e10200034.
29. Velentzas K., Heinen T, Tenenbaum G, et al. Functional Mental Representation of Volleyball Routines in German Youth Female National Players. *Journal of Applied Sport Psychology.* 2010;22(4):474-485.
30. Durdubas D, Martin LJ, Koruc Z. An examination of nonverbal behaviours in successful and unsuccessful professional volleyball teams. *International Journal of Sport and Exercise Psychology*. 2021;19(1):120-133.
31. Englert C, Seiler R. Anxiety and volleyball performance in a real testing situation: gender differences in competitive environments. *Educational Psychology.* 2020;40(6):735-749.
32. Pelin F, Predoiu R, Mitrache G, et al. Generation of efficient behaviours in the case of performance athletes. *Discobolul – Physical Education, Sport and Kinetotherapy Journal*. 2018;53:31-38.