

THE ASSESSMENT OF AGGRESSION AND ANXIETY IN YOUNG BASKETBALL AND HANDBALL PLAYERS

OCENA AGRESJI I LĘKU U MŁODYCH KOSZYKARZY I PIŁKARZY RĘCZNYCH

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Summary

Background. Playing sports entails numerous forms of stress that athletes need to be able to manage in order to deliver the desired performance. It is also important that they release any accumulated tension in a way that would enable them to be more assertive.

Material and methods. The sample consisted of 147 athletes (age 13.93±1.22). The validated Hungarian version of the Buss-Perry (1992) Aggression Questionnaire (BPAQ) and the State-Trait Anxiety Inventory for Children were utilized in the research (STAI-C). The statistical analyses were examined through SPSS 24.0. software, where values $p \leq 0.05$ were considered significant.

Results. Trait aggression had a positive correlation with state anxiety ($r=0.17$; $p=0.04$) and trait anxiety as well ($r=0.17$; $p \leq 0.01$). A positive correlation has been found between verbal aggression and trait anxiety ($r=0.19$; $p=0.03$), and state anxiety ($r=0.17$; $p=0.44$). A positive correlation can also be found between physical aggression and trait ($r=0.28$; $p \leq 0.01$) and state anxiety ($r=0.16$; $p < 0.05$). Trait anxiety has been found higher in female athletes (33.47 ± 7.01) than in males (29.75 ± 5.81) ($t=-3.24$; $p=0.04$).

Conclusions. Based on the results, it was found that there is a strong correlation between anxiety and aggression. Thus, as it is crucial for everyday people to have appropriate coping skills, it would be also important for athletes.

Keywords: BPAQ, STAI-C, aggression, sport, anxiety

Streszczenie

Wprowadzenie. Uprawianie sportu wiąże się z licznymi formami stresu, które sportowcy muszą umieć opanować, tak aby zapewnić sobie pożądane wyniki. Ważne jest również rozładowywanie całego nagromadzonego napięcia w sposób, który pozwoli im być bardziej asertywnymi.

Materiał i metody. Próba składała się ze 147 sportowców (wiek 13,93±1,22). W badaniu wykorzystano zwalidowaną węgierską wersję Kwestionariusza Agresji Buss-Perry'ego (1992) (BPAQ) oraz Inwentarz Stanu i Cechy Lęku dla Dzieci (ang. *State-Trait Anxiety Inventory for Children - STAIC*). Analizy statystyczne przeprowadzono za pomocą oprogramowania SPSS 24.0, w którym wartości $p \leq 0,05$ uznano za istotne.

Wyniki. Agresja jako cecha korelowała dodatnio ze stanem lęku ($r=0,17$; $p=0,04$), jak również z lękiem jako cechą ($r=0,17$; $p \leq 0,01$). Stwierdzono dodatnią korelację pomiędzy agresją werbalną a lękiem jako cechą ($r=0,19$; $p=0,03$) i lękiem jako stanem ($r=0,17$; $p=0,44$). Można również stwierdzić dodatnią korelację pomiędzy agresją fizyczną a lękiem jako cechą ($r=0,28$; $p \leq 0,01$) i lękiem jako stanem ($r=0,16$; $p < 0,05$). Stwierdzono wyższy poziom lęku u kobiet-sportowców ($33,47 \pm 7,01$) niż u mężczyzn ($29,75 \pm 5,81$) ($t=-3,24$; $p=0,04$).

Wnioski. Na podstawie wyników stwierdzono, że istnieje silna korelacja między lękiem a agresją. W związku z tym, podobnie jak w przypadku zwykłych ludzi, posiadanie odpowiednich umiejętności radzenia sobie jest tak samo ważne dla sportowców.

Słowa kluczowe: BPAQ, STAI-C, agresja, sport, lęk

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Introduction

Physical activity is well known in physiological and psychological fields, as it contributes to maintaining mental health [1]. Mental health is associated with lower levels of anxiety and lower trait aggression [2]. Sports support the maintenance of psychological health by reducing anxiety and improving mood [3-5].

Sports activity may properly be perceived as a tool to reduce the symptoms of anxiety, as a result of which our mental health and well-being are improved [6,7]. However, in competitive sports anxiety is commonly experienced by athletes. It is a negative emotional state that is activated when the individual perceives the pressure to perform as threatening [8]. The intensity of people's general level of anxiety varies – this is referred to as trait anxiety. The extent to which certain stimuli or situations are perceived as threatening is shown by state anxiety [9]. As for what difference may exist between the genders, research has shown that females have a higher level of anxiety than males, which is explained by the fact that females internalize their feelings while males externalize them, which may even lead to aggressive behavior [10]. According to the frustration-aggression hypothesis [11], if an individual is prevented from or faces obstacles in reaching their objective, they experience frustration. When this occurs, they attempt to put an end to this experience, although this is often pursued through aggressive acts. Sports may present the athlete with numerous situations that can evoke frustration. Frustration induces arousal and produces anger, which may lead to aggressive behavior. Buss and Perry [12] define trait aggressiveness as the propensity to engage in physically or verbally aggressive behavior, to hold hostile cognitions, and to experience and express anger. It is a relatively stable personality predisposition to respond to certain situations with acts of aggression. Aggression is defined as causing harm intentionally [13], which is inappropriate conduct in sports. The level of aggression may vary from sport to sport. However, it occurs most frequently in sports where the rules allow for more numerous instances and a greater degree of physical contact with the opponent [14-17]. Handball players are characterized by one of the highest levels of trait aggression [18]. In the case of aggression and anxiety, Pačesová and Šmela [19] found a positive relationship between anger and anxiety. Negative emotions, such as anger, may lead to aggression [20,21].

Regular sporting activity can lead to favorable personality changes in addition to many other known positive effects; several studies suggest that sports activity can help reduce trait aggression and help maintain socially desirable norms [15].

This research aimed to assess basketball and handball players' anxiety and aggression levels and to see if there is any difference between the genders in terms of anxiety. We also intended to examine the correlation between the two variables. In this study, a positive correlation was assumed between anxiety and aggression (H1). A significant difference was hypothesized in the aggression levels of the players of the two sports (H2). A higher level of anxiety in females was assumed compared to males (H3).

Material and methods

Study design

The cross-sectional quantitative study was conducted between June and September of 2018 in Pécs, Hungary.

Data collection and sample

The selection criterion was to be a certified athlete (at least 1 year of sports activity and 3 x 1.5 hours of training per week) and at least 12 years old. Furthermore, it was necessary to sign the consent form (or parental consent form) after a briefing about the study.

Undergoing psychiatric treatment and use of medications were included as an exclusion criterion.

Respondents were required to be competitive athletes. The sample consisted of athletes aged 11-15 (N=147, mean age: 13.93±1.22 years), 51 males (34.7%) and 96 (65.3%) females. There were 57 handball players (36 females, 21 males), and 90 basketball players (60 females, 30 males) in the sample (Table 1).

Table 1. Descriptive characteristics of the sample

	male handball		female handball		<i>p</i>	male basketball		female basketball		<i>p</i>	- <i>p</i> 1	- <i>p</i> 2
	Mean	SD	Mean	SD		Mean	SD	Mean	SD			
age	14.81	0.40	14.53	0.65	0.099	13.60	1.30	13.43	1.32	0.567	<0.001	0.154
training/week	8.33	0.58	10.42	12.66	0.950	5.73	1.31	5.70	1.55	0.798	<0.001	0.701
sport age	7.05	1.56	7.22	1.88	0.643	6.27	2.18	6.87	12.30	0.099	<0.001	0.244
match/year	36.00	31.55	33.47	16.41	0.771	39.77	21.95	28.90	10.69	0.008	0.303	0.032
primary school	3	14.29	13	36.11	<0.001	18	60.00	39	65.00	0.351	<0.001	<0.001
secondary school	11	52.38	3	8.33		1	3.33	0.00	0.00			
high school	7	33.33	20	55.56		11	36.67	21	35.00			

Notes: *p*1 handball-basketball difference; *p*2 gender differences

Test methods

The investigation was conducted according to the following: first of all, the parents and the children were informed about the research. After reading and signing the study information sheet and the parental consent form, the athletes filled in the demographic data sheet and the Buss-Perry [12] Aggression Questionnaire (BPAQ) and State-Trait Anxiety Inventory for Children (STAI-C) [22] questionnaires. This took approx. 20-25 minutes. Participation in the study was voluntary and anonymous. Socio-demographic characteristics were obtained through questions regarding age, gender, sports age, number of training sessions per week, number of matches per year and the highest level of education.

Questionnaires used

Buss-Perry Aggression Questionnaire – BPAQ

The standardized Aggression Questionnaire (AQ/BPAQ) developed by Buss and Perry [12] assesses trait aggression with 29 items and a five-point Likert scale (1 = very untrue of me, 5 = very true of me). Besides the total score that defines overall trait aggression, respondents' scores can be calculated for the four subscales as well: verbal aggression, physical aggression, anger, and hostility. The test has been adapted to Hungarian and validated by Gerevich et al. [23].

State-Trait Anxiety Inventory for Children

The children's version of the State-Trait Anxiety Inventory for Children was developed based on the adult version by Spielberg et al. [9] and is used for the assessment of the anxiety level of schoolchildren. The Hungarian version of the questionnaire was developed by Mihály Sipos and Kornél Sipos [22]. The questionnaire consists of 40 questions. The first 20 questions pertain to global anxiety that is present regardless of circumstances, and thus, manifest trait anxiety (proneness to anxiety).

The statements assess how the respondent feels in general, that is, how prone they are to anxiety. The following 20 questions assess the anxiety level of the momentary state, that is, state anxiety. The responses inform us about how the individual feels at the given moment.

Data privacy and ethical considerations

All the respondents were volunteers, and the questionnaires were anonymized. The research was licensed by the National Scientific and Research Ethics Committee (15117-9/2018/EÜIG).

Statistical reporting

Descriptive statistics were calculated to determine demographic among athletes, with data presented as the mean (standard deviation, SD). In the examination of gender differences, a two-sample t-test was used. Pearson's correlation coefficient was applied to analyze the correlations between the total scores of tests and the subscales. All statistical analyses were performed using SPSS 27.0 software and the *p*-value was set at 0.05.

Results

As for the difference between the two sports, no difference has been found between handball players and basketball players either in anxiety or in aggression (Table 2, Table 3).

Table 2. Differences between aggression levels of young basketball and handball players based on BPAQ scores

		All athletes		Basketball		Handball		Difference
Subscales	Groups	Mean	SD	Mean	SD	Mean	SD	<i>p</i>
	Verbal aggression	all	14.89	3.00	14.96	3.40	14.79	2.25
male		15.27	2.32	15.77	2.53	14.57	1.83	0.063
female		14.69	3.29	14.55	3.71	14.92	2.48	0.316
difference (<i>p</i>)		0.106		0.038		0.706		
Physical aggression	all	19.39	5.85	19.66	5.93	18.98	5.75	0.578
	male	21.71	5.95	21.57	6.08	21.90	5.91	0.863
	female	18.17	5.43	18.70	5.66	17.28	4.98	0.322
	difference (<i>p</i>)	0.000		0.018		0.007		
Anger	all	16.78	4.22	17.29	4.54	15.98	3.57	0.096
	male	16.73	3.97	17.17	4.35	16.10	3.36	0.299
	female	16.81	4.37	17.35	4.66	15.92	3.73	0.207
	difference (<i>p</i>)	0.989		0.956		0.947		
Hostility	all	20.73	4.36	21.12	4.76	20.11	3.58	0.392
	male	20.06	3.88	20.43	4.26	19.52	3.27	0.447
	female	21.08	4.57	21.47	4.99	20.44	3.76	0.579
	difference (<i>p</i>)	0.278		0.550		0.340		
Total score	all	71.80	14.15	73.02	15.32	69.86	11.95	0.356
	male	73.76	13.46	74.93	14.57	72.10	11.85	0.343
	female	70.75	14.47	72.07	15.72	68.56	11.98	0.520
	difference (<i>p</i>)	0.168		0.214		0.341		

Notes: BPAQ: Buss-Perry Aggression Questionnaire; SD: Standard Deviation.

Table 3. Gender differences of the STAI-C test of young basketball and handball players

Subscales	Groups	All athletes		Basketball		Handball		Difference
		Mean	SD	Mean	SD	Mean	SD	<i>p</i>
STAI-T	all	32.18	6.84	32.73	6.94	31,30	6,64	0,250
	male	29.75	5.81	30.37	5.74	28,86	5,94	0,277
	female	33.47	7.01	33.92	7.23	32,72	6,68	0,457
	difference (<i>p</i>)	0.001		0.023		0.025		
STAI-S	all	45.57	4.93	45.46	5.81	45,75	3,09	0,917
	male	46.51	3.20	46.10	3.43	47,10	2,81	0,365
	female	45.07	5.59	45.13	6.70	44,97	3,01	0,262
	difference (<i>p</i>)	0.040		0.582		0.010		

Notes: SD: Standard Deviation, STAI-T: State-Trait Anxiety Inventory-Trait, STAI-S: State-Trait Anxiety Inventory-State.

A difference has been found between the genders in the total score of trait anxiety ($p < 0.04$). On average, females scored higher (33.47 ± 7.01) than males (29.75 ± 5.81).

Upon examining the correlation between anxiety and aggression, it was found that trait aggression has a positive correlation with both state anxiety ($r = 0.17$; $p = 0.04$) and trait anxiety ($r = 0.17$; $p \leq 0.01$). In the case of subscales, a positive correlation can be found between verbal aggression and both trait anxiety ($r = 0.19$; $p = 0.03$) and state anxiety ($r = 0.17$; $p = 0.44$). A positive correlation can also be found between the physical aggression subscale and both trait ($r = 0.28$; $p \leq 0.01$) and state anxiety ($r = 0.16$; $p = 0.05$). A positive correlation was found between the rage subscale and trait anxiety ($r = 0.51$; $p \leq 0.01$), and between the hostility subscale and trait anxiety ($r = 0.63$; $p \leq 0.01$).

Discussion

Our research aimed to assess the correlation between anxiety and aggression in athletes. We also assessed whether there is any difference between the variables of basketball players and handball players. Furthermore, we examined if there is a significant difference in anxiety between the sexes. In our first hypothesis, it was assumed that there would be a positive correlation between anxiety and aggression. We have found that trait aggression has a positive correlation with both state anxiety and trait anxiety. Similarly, a positive correlation can be found between verbal aggression and both trait anxiety and state anxiety in the case of the subscales as well. A positive correlation can also be found between the physical aggression subscale and both trait and state anxiety. A positive correlation was found between the rage subscale and trait anxiety and the hostility subscale and trait anxiety. The conclusion is that anxiety has a strong correlation with all types of aggression. Our findings are in accordance with previous theories [11] that posit that the tension generated by anxiety and frustration is released through aggressive behavior. In our second hypothesis, a significant difference between the aggression levels of the players of the two sports was assumed. Previous research has shown that the players of sports that involve a higher level of physical contact demonstrate higher levels of aggression [18]. However, we did not find a significant difference between the two sports either in aggression or anxiety. In our third hypothesis, we examined whether there is a higher level of anxiety in females compared to males. This hypothesis has been successfully substantiated. A difference between the sexes can be observed not only in athletes but in general, which may be rooted in the fact that females are more likely to keep their feelings to themselves, which may raise their anxiety levels [10]. The findings may lead us to the conclusion that anxiety plays an important role in aggressive behavior, particularly in females. In terms of sports performance, both factors may prevent the athlete from reaching their full potential. Aggression is inappropriate and unsportsmanlike behavior, and it diverts energy away from the sports activity – it is thus not an efficient practice. The negative effect of anxiety

is also a well-known phenomenon in sports psychology [8]. Regarding performance, it would be important to help athletes develop coping strategies that help them reduce their anxiety and to support them in developing aggression control. The methodologies used in sports psychology may offer solutions to these issues. The management of aggression and anxiety is also important in everyday life, so helping with appropriate coping strategies can be an important aspect. The use of interventions aimed at these factors may be particularly important during adolescence, which is a sensitive period. So, it would be also important to compensate/prevent high trait anxiety and aggressiveness, and not only with respect to coping with the challenges of high-stakes situations, where it only manifests itself.

Limitations

The limitations of the study include the sample's non-representative nature. To avoid potential confounders, participants were carefully selected, resulting in a study population of modest size. More impressive results on the effects of anxiety and aggression, would entail having a larger number of participants.

Conclusions

Anxiety and accumulated frustration may result in aggressive behavior, which is an unwanted form of conduct in sports. Our findings have demonstrated that there is a strong correlation between the two variables. Thus, it would be important for athletes to be able to manage their anxiety and develop effective coping strategies that allow them to deal with the challenges posed by high-stakes situations.

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