

Effect of depression among taekwondo students and its relationship with negative events due to COVID-19

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Abstract

Background and Study Aim The aim of this research was to examine The effect of depression among taekwondo students and its relationship with negative events due to COVID-19 in Mazandaran University.

Material and Methods This research was conducted on the appropriate sample of 116 Taekwondo students from Mazandaran university, being 18-24 years old. The applied measure instruments were - Adolescent Perceived Events Scale, Automatic Thoughts Questionnaire, General Self-Efficacy Scale, Confrontation with Stressing Situation Questionnaire, Social Support Questionnaire, Children's Depression Rating Scale-demonstrated satisfactory reliability. The data was processed using descriptive parameters, Pearson's correlation coefficient and hierarchy regression analysis & SPSS₂₃ software.

Results Achieved results didn't show that predictor variables (common automatic thoughts, the sense of general self-efficiency, confrontation strategies and perceived support of family, coach and team peers) are the cause of the common negative events due to COVID-19 and depression relations of Taekwondo students in the middle period of adolescence.

Conclusions On contrary, the results have emphasized the fact that mutual relations of common negative events and depression of Taekwondo students, in this young category, can be explained using independent variables (unwilling unconscious negative thoughts, confrontation focused on feelings, as well as support of family, coach and team peers).

Keywords negative events, depression, taekwondo, COVID-19, university students.

Introduction

As the Covid-19 epidemic progressed, communities and sports organizations stepped up their efforts to slow the spread of the virus [1]. Imposition of lockdown restrictions during the coronavirus disease 2019 (COVID-19) pandemic was sudden and unprecedented and dramatically changed the life of many people, as they were confined to their homes with reduced movement and access to sports center and fitness training facilities. To this end, many sports organizations and leagues decided to cancel all remaining competitions [2]. The disease also had a widespread effect on organized group sports [3]. These conditions have affected the attitude, morale of sports coaches and athletes [1]. The pandemic has led to significant disconnections in society. An analysis of the gaps between politics and science was undertaken Yian Yin et al [4]. In the context of a pandemic, it has been shown that there is a serious concern that unverified and potentially incorrect scientific results may be accepted by society and used in the political sphere.

The science of psychology concluded different field and subjects and it is used to increase the life's qualities. Sports psychology is counted among the essential fields of psychology and it endeavors to make the desired level

of athletes by using psychology facts [5, 6]. Today sports psychologists' endeavor to use the theories of psychology in the fields of enthusiasm and motivation to bring the level of the movements in the desired level. Plus, the sports psychologists are researching on the effects of the sports on the personality traits and in some exceptional cases sport is used as a cure for mental disorder and meditating [7]. Athletes can use this to discourage their opponents and repel or decrease the mental pressure and by using team guidance learn successful team skills. It is clear that the rivalry between individual is the sports competitive spirit. The studding of psychology and using it in the field can be counted as an advantage to counter or describe a move [8].

Despite the great importance and contemporary status of everyday negative events and depression in adolescence, which include major changes in cognitive, social, and emotional level, in our country, they have been relatively rarely investigated [9].

According to the available studies, in previous research, this problem was studied in the last few decades by a number of authors. Studies by Croatian authors [10-13], emphasize that stress life events, including war events, predict the formation and intensifying of depression symptoms and other problems of adaptation on the sample of adolescents. Moreover, in their research [14, 15], believe that the accumulation of less significant

life events represents better predictor of depression than major life events, as well as the fact that the relationship becomes stronger with the age.

In their studies [16, 17], concluded that the sensitivity to the effects of life events is more intense in people, resulting from increasing cognitive and emotional maturity, romantic relationships, present and past negative events, complex social situations and stress, which leads to increase of the level of depression during the stressful period of adolescence. According to a study [18], the model of individual factors, such as cognition and coping, social support and environment factor, permanently become significant in prediction of depressive symptoms.

The results of the research conducted by [19, 20], confirmed the hypothesis that negative cognitive tendencies of adolescents, independently or in combination with stress, contribute to their current depression. The research conducted by [15], suggests that the depressed persons in adolescence are unable to successfully affect their daily negative events.

In their studies [18, 21], found out that adolescents coping skills with stress contributes to the prediction of depression symptoms and the interpretation of the relation of stress and adaptation. It is assumed that badly developed strategies or predominant use of inadequate skills, individually and interacted with stress, are especially harmful to the mental health of adolescents. Also, according to research [22], social support of parents, peers and teachers, is negatively interrelated with depression symptoms.

The COVID-19 pandemic had a strong influence on the conditions for the preparation of athletes and the education of students. This is confirmed by many studies in which the following areas are highlighted:

1. Depression among students during the COVID-19 pandemic:

- With the MVC (Mindfulness Virtual Community) intervention, there were significantly reduced depression and anxiety symptoms but no significant effect on perceived stress [23].
- Learning through online platforms have given rise to depression and anxiety disorders among undergraduate university students, where there was a significant correlation between student satisfaction and prevalence of depression, anxiety, and stress [24].
- Despite medical students' knowledge of disease control and prevention, their lives were greatly affected by social distancing, especially in the Wuhan epicenter. Even well-informed students needed psychological support during these extraordinarily stressful times [25].

2. Physical activity of students and training of taekwondo athletes during the COVID-19:

- Despite decreasing physical activity, the university athlete performed physical activity at home during confinement by COVID-19, harmonizing the time in the learning processes in their future profession [26].
- Public campaigns and media-based interventions encouraging home-based physical activities should

be promoted to attenuate the impact of lockdown measures during a pandemic [27].

- The feedback from the participants in the online tournament clearly indicate that such an event can and must be used in order to maintain motivation in athletes. Such an event cannot fully replace the “real” competition, but it is essential under the conditions of social isolation [28].
- In the Taekwondo field, distance training proved to be a promising practice for the conducting of all theoretical and some practical classes for the officials in the country. The studies conducted allow us to conclude that during the COVID-19 pandemic it is possible to use modern technical means and methods successfully in order to involve athletes, coaches and officials with sports activities [29].
- Most of the students switched to online trainings under the social distancing rules and local lockdowns. Still, after the end of the lockdown not many taekwondo practitioners returned to normal activities. A plausible explanation of these reduced numbers is that parents and students are still afraid of getting infected with the COVID-19 [30].
- Developed new some high-intensity interval training (HIIT) recommendations for Olympic combat sports athletes that can be performed at home. The HIIT protocols should be added by body mass-based muscle strengthening exercises (similar to technical exercises), with the goal to preserve athletes' muscle mass and physical fitness [31].

A review of previous research shows obvious lack of research papers on the correlation of negative events, unconscious thoughts, self-efficacy, coping skills and social support on depression of Taekwondo students. It is evident that various factors influence the relationship of life events and depressive symptoms among adolescents, i.e. They can absorb or amplify the effects of stress for them. Therefore, it can be assumed that if Taekwondo students experience numerous negative events, have low level of self-efficacy, and do not receive suitable social support and do not apply positive successful ways of coping, they feel more depression symptoms. In addition, it can be assumed that the prediction variables of cognition, coping and perceived social support, can be transformed under the influence of stressful life events and act as a set of stress influences on depression variable of Taekwondo students in the middle adolescence. Acceptance or rejection of the hypothesis, and statistical relevance of the obtained coefficients, will be calculated with a critical value and the probability of error of less than 5%.

The above review of relevant references indicates the complexity of the problem. The fact the relationship of phenomenon of daily negative events and depression in adolescents has been investigated worldwide. Due to the fact that correlation regression relationships between everyday negative events and depression in the sports population, have not been found in previous research studies, it is extremely important to empirically investigate this phenomenon, which will lead to its

complete understanding. Therefore, in order to obtain new information, i.e. a clear picture of whether the negative repeating day after day can be a predictor depression model, we need to conduct the research on the sample Taekwondo students. Accordingly, the aim of this study was: a) to examine the effects of the interaction of negative events, unconscious thoughts, self-efficacy, coping skills and social support on depression of Taekwondo students and b) to investigate if automatic thoughts, self-efficacy, coping skills and social support mediate in the relations of negative events and depression in the adolescent population of Taekwondo students.

Finally, we should emphasize the fact that it is still known about the relationship between the phenomena of everyday negative events and depression in sports, i.e. taekwondo population. Investigation of these problems may have important methodological and theoretical applications. Therefore, this study is very important, since it has been one of the first empirical studies of the given topic in our country on the sample of Taekwondo students.

Hypothesis. Does due COVID-19, affect to relationship effect of depression with negative events among taekwondo students?

Materials and Methods

Participants

The study involved 116 Taekwondo students, aged 18 to 24 years in the Mazandaran universities. All subjects had at least five years of systematic and organized Taekwondo students training and competition. The examinees had been informed about the aim of the research, before the implementation of survey. They were asked to participate and explained that they have the right to give up due to COVID-19 whenever they want.

Research Design

Participation in the survey was voluntary. It was conducted by the authors of this paper with the permission of Taekwondo student's university clubs. The study was conducted in groups during regular trainings due to COVID-19. Group size varied from 20 to 30 examinees. Filling out the questionnaire, on average, took about 60 min prior to a survey, the examinees were informed about the research and the ay of data safety protection, after which they signed an agreement on participation in the study. Their task was to circle the appropriate number on the scales. After a review of test materials, seven questionnaires which did not conclude answers to all items were discarded, so that the monitoring of the program included the final sample of 116 Taekwondo students.

The measuring instrument is an adaptation of the Adolescent Perceived Events Scale- Apes ($\alpha=0.89$), which was made by Kurtović [11], Croatian translation of the Automatic Thoughts Questionnaire ($\alpha=0.97$) – ČUPAM by Hollon & Kendall [32], which estimates some cognitive aspects of depression by Proroković & Zelić [32], modified version of the questionnaire ($\alpha=0.87$) by Sorić & Proroković [22]. The measuring instrument Ivanov & Penezić [34] consists of 10 items for which

the examinee assesses the extent to which general and stable sense of their own success in dealing with a variety of stressful situations relates to them. The examinees determined the importance of each value on five-level Liguert's scale, ranging from 1 (absolutely untrue for me) to 5 (absolutely true for me), with the possible range of scores from 10 to 50. Reliability of the scale measured by Cronbach alpha coefficient is.

Conducted factor analysis – applying main components analysis (Varimax rotation and the Kaiser-Guttman criterion for factor extraction), confirmed the tri-factor structure, which describes coping directed to: problem ($\alpha=0.88$), feelings ($\alpha=0.84$) and avoidance ($\alpha=0.87$). The measuring instrument Hudek–Knežević [35] is an adapted version of the Social Support Appraisal Scale - SS, by Vaux and associates, which measures three aspects of social support: the support of family, friends and support at work. The questionnaire consists of 24 items, the answers are given at the five-level scale from 1 – absolutely untrue for me to 5 – absolutely true for me, with the possible range of results from 24 to 120. Applying main components analysis (Varimax rotation and Kaiser-Guttman criterion for factor extraction), three latent dimensions were isolated: support of the family, friends and coaches. The coefficients of internal consistency, Cronbach alpha, for individual subscales are ($\alpha=0.89$, $\alpha=0.92$ and $\alpha=0.87$), and it can be concluded that certain statements reliably represent overall result of the subscales.

Croatian version of this measuring instrument by Vulić-Prtorić [36] contains 26 sets of 3 three items covering the visible symptoms of depression (sadness, sleep disorders, appetite loss, suicidal ideas, etc. The strength of a symptom is changed within each set of items, and the examinee selects one of the proposed sentences that describe how he felt in the last two days. Answers are scored with 0, 1 or 2 points, and the results ranges from 0 to 54 points, whereas a higher score indicates greater depression.

Statistical Analysis

Total result is calculated as a linear combination of all answers. Cronbach reliability coefficient was ($\alpha=0.88$). For analyzing the data, we used Kolmogorov-Smirnov Test for checking data normality, hypothesizes were tested by using Pearson's correlation, and regression test ($p\leq 0.05$), by SPSS₂₃ software.

Results

The result of this indicates the fact that the distribution of the results in this test does not deviate significantly from a normal Gaussian distribution ($p>0.20$). Descriptive data on the measured variables in the survey sample are presented in Table 1a, 1b. Based on the distribution of values of arithmetic means and standard deviations, it is evident that the majority of junior Taekwondo sportsmen exhibit lower levels of depression, negative events due to COVID-19 and negative subconscious thoughts without volition.

Table 1a. Descriptive parameters on the subscales of measuring instruments

ITEMS	MIN	MAX	AS	SD
Negative events due to COVID-19	19.00	75.00	37.98	9.28
Automatic thoughts	29.00	145.00	60.02	24.01
Self-efficacy	9.00	49.00	37.00	5.99
Coping directed to a problem	15.00	80.00	54.97	8.72

Table 1b. Descriptive parameters on the subscales of measuring instruments

Items	MIN	MAX	AS	SD
Coping directed to a problem	15.00	80.00	54.97	8.72
Coping focused on emotions	17.00	84.00	52.03	11.00
Coping by avoidance	14.00	66.00	44.05	9.11
Family support	10.00	75.00	36.00	5.97
Friend support	9.00	39.00	32.96	5.44
Support of a coach	7.00	38.00	24.95	5.99
Depression	0.01	49.00	13.02	7.22

Table 2a. Pearson's correlation coefficients between examined variables

Items	1	2	3	4
Negative events due to COVID-19	-			
Automatic thoughts	0.52***	-		
Self-efficacy	-0.05	-0.38***		
Self-efficacy	-0.05	-0.38***		
Coping directed to a problem	-0.05	-0.17**	0.59***	-
Coping focused on emotions	0.40***	0.57***	-0.21**	0.13**

Significance level ** $p < .01$; *** $p < .05$

Table 2b. Pearson's correlation coefficients between examined variables

ITEMS	1	2	3	4	5	6	7	8	9
Coping by avoidance	0.05	-0.05	0.29	0.41	0.20	-			
Family support	-0.40	-0.29	0.31	0.19	0.05	0.17	-		
Friend support	-0.14	-0.19	0.29	0.30	-0.05	0.38	0.40	-	
Support of a coach	-0.29	-0.24	0.25	0.24	0.05	0.13	0.27	0.19	-
Depression	0.50	0.69	-0.41	-0.25	0.45	-0.12	-0.25	-0.26	-0.28

Table 2a, 2b shows positive and negative intercorrelations of the measured variables. By examining the table, it was observed that all the tested variables showed a significant linear correlation with depression in the assumed directions. Low and moderate nonzero values of Pearson's correlation coefficients were in range of ($r = -0.17$) for Coping by avoidance, to ($r = 0.67$) for negative automatic thoughts. Taking into account the obtained values of the variables, prediction of an examined variable according to the test results of the second variable, with estimation error of ($p > 0.95$), can be expected.

In order to test the interaction of predictor variables (negative events with negative unconscious thoughts without conscious volition, self-efficacy, problem focused coping, emotion and avoidance, as well as the support of family, the Taekwondo sportsmen from the club and

the coach), and the criterion of depression, in addition to correlation aspect, a series of hierarchical regression analysis was conducted. In the first step of each analysis, the predictors are categorized (Negative events and one of the possible moderators), and in the 2nd step, their mutual influence, in order to check whether it predicts the interaction of criterion variable of depression after controlling the effect of predictor in the first step (Table 3a, 3b).

After examining the significant nonzero beta coefficients beta in the cells of the matrix, at the level of significance ($p < .05$), it is obvious that nonmutual effect showed significant effects on the criterion variable depression, except marginally significant effect of mutual influence of negative events, family support, and Taekwondo sportsmen from the club. It did not confirm

Table 3a. Hierarchical regression analysis for depression criterion variable

ITEMS	R	R ²	SS
Automatic thoughts			
1. Step Negative events due to COVID-19	0.69	0.57	0.19
Automatic thoughts			0.59
2. step Negative events due to COVID-19 x Automatic thoughts	0.69	0.57	0.03
Self-efficacy			
1. Step Negative events due to COVID-19	0.60	0.36	0.52***
Self-efficacy			-0.29***
2. Step Negative events due to COVID-19 x Self-efficacy	0.60	0.36	0.01
Coping focused on a problem			
1. Step Negative events due to COVID-19	0.49	0.29	0.51***
Coping focused on a problem			-0.19***
2. step Negative events due to COVID-19 x Coping focused on a problem	0.49	0.29	0.02

Significance level***p < .05

Table 3b. Hierarchical regression analysis for depression criterion variable

ITEMS	R	R ²	SS
Coping focused on emotions			
1. step Negative events due to COVID-19	0.60	0.29	0.28***
Coping focused on emotions			0.29***
2. step Negative events due to COVID-19 x Coping focused on emotions	0.60	0.29	0.05
Coping by avoidance			
1. step Negative events due to COVID-19	0.52	0.26	0.50***
Coping by avoidance			-0.15***
2. step Negative events due to COVID-19 x Coping by avoidance	0.52	0.26	0.05
Family support			
1. step Negative events due to COVID-19	0.56	0.31	0.39***
Family support			-0.19***
2. step Negative events due to COVID-19 x Family support	0.56	0.31	0.05
Friend support			
1. step Negative events due to COVID-19	0.53	0.26	0.47***
Friend support			-0.20
2. step Negative events due to COVID-19 x Friend support	0.53	0.26	0.05
Support of a coach			
1. step Negative events due to COVID-19	0.49	0.30	0.41***
Support of a coach			0.30
2. step Negative events due to COVID-19 x Support of a coach	0.49	0.07	0.05

Significance level ***p < .05

the hypothesis that these factors adjust effects of negative events on depression criteria.

In order to define if the individual variable represents a mediator between the predictor and criterion [26] consider it is necessary to fulfill three conditions: (1) a predictor must predict the mediator, (2), the mediator must predict the criterion variable after the verification of the predictor, and (3) the mediator must be introduced in the final step of the hierarchical regression analysis. The

effect of the independent variables in the interpretation of the variance of criterion variable should not be statistically significant. Thus, if the impact of the predictor is greater than zero, but not statistically significant, then it comes to a complete mediator, and if the effect of predictors fell to a lower level, but it is still statistically significant, then it comes to a partial mediator.

Table 4 shows the results of the regression analyses used to investigate the first precondition, i.e. whether the

Table 4. Contribution of a to the criterion

ITEMS	R	R ²	SS	P
Automatic thoughts	0.51	0.19	0.50	0.05
Self-efficacy	0.05	0.01	-0.07	0.17
Coping focused on a problem	0.03	0.01	-0.03	0.12
Coping focused on emotions	0.40	0.12	0.41	-0.05
Coping by avoidance	0.08	0.03	0.07	0.13
Family support	0.43	0.16	-0.40	0.05
Friend support	0.15	0.00	-0.15	0.05
Support of a coach	0.35	0.09	-0.36	0.05

Table 5. Contribution of negative events to depression

PREDICTORS	R	R ²	SS	P
1. step				
Negative events due to COVID-19	0.50	0.26	0.50***	0.50***
2. step				
Negative events due to COVID-19			0.03	0.08
Automatic thoughts			0.48***	0.41***
Coping focused on emotions	0.80	0.08	-0.20***	0.19**
Family support			-0.18***	-0.16***
Friend support			-0.09*	-0.07*
Support of a coach			-0.22***	-0.20***

Significance level *p < .05, ***p < .01

predictor - negative events - predicts criterion variables: unconscious thoughts without conscious volition, self-efficacy, and the occurrence of observance and support of the family, Taekwondo sportsmen from club and the coach.

Bearing in mind the established fact that negative events predicted unconscious thoughts without conscious volition, coping focused on emotions and social support, further analysis in the second step was carried out at the level of significance ($p < 0.05$) only with the unconscious thoughts, coping directed to feelings, family support, support of Taekwondo sportsmen from the club and the coach. In order to control the second and the third step [37] claim that applied hierarchical regression analysis represents the precondition for defining if a certain variable represents a mediator in relation to a predictor and criterion, whereas negative events belong to the first step and Coping focused on emotions, and social support belong to the second step in order to control if relations of negative events and depression are completely caused by these variables. Depression is actually caused by multiple agents, whereas it is assumed that incomplete agents for particular mediators would be obtained. In addition, due to the mutual dependency between the mediators, there is greater possibility of false mutual relationships between variables. Thus, in the second step of hierarchical regression analysis partial variables that represent important predictors of depression are noticed, which draws attention to their intermediate effects (Table 5).

A review of statistically significant nonzero beta coefficients, in the second step of hierarchical regression analysis of predictor variables (the unconscious mind without conscious volition, coping focused on feelings, family support, support of Taekwondo sportsmen from the club and the coach) indicated a significant partial effect in the interpretation of the variance of depression. At the same time, the impact of negative events in explaining the variance of depression after the introduction of additional independent variables (unconscious thoughts without conscious volition, coping directed to feelings and social support) in the analysis, is not statistically significant for the whole.

Taekwondo player's population. From the point of view of the regression analysis, the results are reliable suggested that the linear correlation between the variables of negative events and depression, on the examined sample, was mediated by independent variables (unconscious thoughts without conscious volition, coping focused on feelings, family support, support of Taekwondo sportsmen from the club and the coach).

Discussion

The relevance of the study of the relationship between the consequences of COVID-19 and changes in the psycho-emotional and physical spheres is proved in the study by Anyan et al [38]. It was found that a decrease in physical activity increased the risk of symptoms of anxiety and depression. An important factor in the protection of mental health was the level of resistance to

adverse factors.

These findings do not confirm the hypothesis that the unconscious thoughts, a sense of general self-efficacy, coping skills and support of family, Taekwondo sportsmen from the club and the coach, coordinate relations between daily negative events and depression of Taekwondo sportsmen in middle adolescence. On the contrary, the results hypothetically draw attention to the fact that the dependence of negative events and depression that occur every day is achieved by negative thoughts, coping focused on feelings, family support, support from the Taekwondo sportsmen from the club and the coach. However, we could be cautious in the interpretation of this new information, since we investigated frequency of everyday psychological discomfort which is typical for the middle period of adolescence in a population of athletes. Having considered that experienced verification of such events was not investigated, it can be complex to come to a conclusion whether the amount and frequency of negative events predict depression in junior Taekwondo sportsmen and whether these relations can be interpreted by the main characteristics of the analyzed events.

Therefore, the hypothesis in this study that the negative automatic thoughts and inactive forms of coping with stress will be intensified, and that self-efficacy, active forms of coping and social support will alleviate the negative effects of the depression on Taekwondo sportsmen, is not confirmed, since there were no significant effects of mutual effects, although it turned out that the aforementioned factors predict depressive marks.

Fraizer et al point out the fact that the intermediate effects are best manifested when the agent is not significantly associated with the predictor and criterion [39]. Given the fact that all possible mediators are in a significant correlation with the depression and automatic thoughts, coping focused on emotions and social support with negative events, it is likely that this can explain the lack of expected related effects.

These authors consider it is likely that the unconscious mind without conscious volition, self-efficacy, coping strategies and social support, directly affect the depression, regardless of the level of negative events. Therefore, it is assumed that in the adolescent period of learning, coping and social support are not yet developed enough in order to stimulate the effects of stress, although to a certain extent they influence the development of depression.

The first important finding relates to the fact that the relations of negative events and depression are mostly caused by negative thoughts, feelings caused by coping and insufficient support of family, Taekwondo sportsmen from the club and the coach.

According to a study Rose & Abramson [40], when negative events occur (disappointment, loss, failure, etc.) people are trying to understand the causes and consequences, and by reproducing the thoughts that are specific to these events, general cognitive style is formed. In their research Garber & Flynn, [41], argue that particularly unpleasant events can cause a comprehensive sense of hopelessness and despair, and individuals who

believe they are subjects to these events, presumably develop the sense of hopelessness and lack of self-esteem. In a study Parker et al, [42], it was found that chronic negative experiences in adolescence contribute to the formation of negative cognition and depression in later life.

In their study Wadsworth et al, [43] state that: a) adolescents form abilities to apply coping skills during the period of maturing, b) under the influence of experience, their style of coping is subject to transformations, c) responds to stress mediate between stress and psychopathological symptoms and, therefore, later in life, they mitigate the effects of chronic stress conditioned by unfavorable socio-economic situation. However, these findings did not determine whether the greater amount of everyday psychological discomfort increases an individual's susceptibility to depression in the way it influences their coping skills. Therefore, if adolescent often experiences negative arousal, he will apply the skills that would reduce it, and not the skills that would adequately affect these negative events, particularly if there is not enough control over these events. To some extent it explains the interdependence between large amounts of stress and higher levels of depression.

These findings have made clearer the fact that the mutual relationship of negative events and depression is caused by of lower perceived social support of parents, the Taekwondo sportsmen from the club and the coach. Interpersonal stressful events have the most intense effects on mental health and emotional reactions, as it is proved in Scott et al research [15].

The analysis of relationships can be used to assess the condition of athletes, to predict their success. The validity of the use of indices of physical development [44], psychophysiological criteria [45] and biochemical indicators [46] for forecasting in martial arts has been confirmed.

The results of correlation and hierarchical regression analysis in this study emphasize the fact that in the mid-adolescence of Taekwondo sportsmen, direct and indirect relationships of negative events and depression should be analyzed. Although there are many findings that draw attention to the fact that depression may be the answer to major negative events, it is assumed that the dependence of everyday psychological discomfort with depression is caused by negative experience, inactive coping and insufficient social support. In fact, our findings especially emphasize the fact that daily negative life events in youthful age of Taekwondo sportsmen can lead to depression.

Obtained results on the predictive function of negative events, automatic thoughts, coping and social support may contribute to the assessment of risk for development of depressive symptoms, as well as in the planning of therapeutic and preventive procedures for junior Taekwondo sportsmen. At the same time, the hypothetical findings about the possible ways in which negative events affect depression, give valuable information about the latent dimensions that should be taken into account

with Taekwondo sportsmen who are under the stress. However, it is important to draw attention to the fact that the negative events variable in our research is only one of the factors that can help in the prediction of negative experience, coping and the perception of social support with Taekwondo sportsmen in the middle adolescence.

The main limitation of our study is the investigation of exclusively male examinees and the impossibility of comparing the relations of analyzed variables and depression in female adolescent Taekwondo players. Also, intersection draft of our study does not allow drawing conclusions on cause-and-effect relationships, as well as the comparison of the levels of depression and negative events with the senior Taekwondo sportsmen population.

From theoretical point of view, this correlation-regression study enabled initial insight into the complex interrelationships of different predictor variables (as the cause), which may affect various components of depression (as a result). In addition to scientific testing of theoretical models, this work made possible a reliable comparison with the results obtained in other European countries, because a unique methodology that provides a starting point for further quantitative analysis and prediction of everyday negative events and depressive symptoms in the population of athletes, was applied. From a practical point of view, findings of the conducted research could be particularly important in the diagnosis of depressive symptoms in junior Taekwondo sportsmen.

It is important to emphasize the fact that our transversal study had several methodological limitations (relatively homogeneous sample, the lack of a theoretical frame of reference and research in this area, the collection of data in a very short period of time, the demographic characteristics of the analyzed samples, and specific sample of junior Taekwondo sportsmen). Therefore, the possibility of interpretation and generalization of the obtained results is partly limited, which reduces its validity. Limitation is also applied to the sample selection and the cooperation with them. Additional limitation was related to the use of only questionnaires and self-assessment scales, so that in future studies it would be necessary to include other measuring instruments, with different types of stimuli, as well as techniques such as assessment by peers and Taekwondo coach. Despite the methodological limitations of this study and the

impossibility of explaining and generalization to the entire population of Taekwondo sportsmen in Serbia, the obtained results are indicative and indicate the need for more extensive research in this area for a unique insight into this issue.

The present study investigated the relationship of predictor variables (negative events with the unconscious thoughts without conscious volition, self-efficacy, coping skills and social support) on depression of junior Taekwondo sportsmen (as criterion).

The analysis of the obtained values of Cronbach alpha coefficients of internal consistency, it was concluded that the applied questionnaires and scales in this study showed satisfactory homogeneity and can be considered a valid measuring instruments for further use and standardization in future theoretical and practical research of athletes in our environment.

Applied correlation and regression models showed with certainty level of 95% that on the one hand, the predictors (automatic thoughts, feelings of general self-efficacy, coping strategies, and support of parents, peers and the coach) affect the variability of the relations of daily negative events and depression of junior Taekwondo sportsmen. On the other hand, the results emphasize, with a probability of error ($p < 0.05$), that linear mutual dependence of everyday negative events and depression of Taekwondo sportsmen, aged 18-24 years, are generated by independent variables of automatic thoughts, emotion-oriented coping, family support, support of Taekwondo sportsmen from the club and the coach.

Conclusion

Summarizing basic facts, it can be concluded that the following longitudinal researches should be conducted on a larger and more representative sample of examinees of different gender and ages, and in other sports, with additional statistical procedures (the increasing number of questionnaires and scales, which would, by including new variables examine indicative correlations between daily negative events and depression). All these would lay the foundation for new research of athletes' population.

Conflicts of Interest

The authors declare no conflicts of interest.

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