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PSYCHOMETRIC PROPERTIES AND VALIDATION OF SR3S QUESTIONNAIRE (STRATEGIES OF COPING WITH STRESS IN SPORT)

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Summary. The main purpose of this article is to describe the process of development of the SR3S Questionnaire (Strategies of Coping with Stress in Sport). We also show its psychometric properties. The obtained results come from two studies: the pilot and the main, embracing approximately 320 contestants training various disciplines (team and individual). The conducted research enabled the application of factor analysis. According to these results an initial division into subscales containing groups of coping strategies was introduced (setting on the goal/victory, seeking support, applying mental techniques, planning/focus on activity). The strategies are investigated and discussed. Discriminant analysis is used to validate the cluster solution. On the basis of the obtained results it may be stated that the SR3S Questionnaire is characterized by satisfactory psychometric parameters.
Key words: coping with stress, athletes, psychometric properties

Introduction

The requirements of modern world cause stress become an inseparable part of human functioning in nearly every sphere of life. Professional sportspeople are exposed to stress connected with training sessions and competitions. The specialization in sport occurs at a constantly earlier stage and the competitors obtain results of extreme character. Moreover, athletes, like any other people, experience daily hassles (Kanner et al., 1981) such as school, financial and professional problems or interpersonal conflicts. They may be multiplied due to requirements imposed

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by sport. On the other hand, however, sport trainings tend to provide competitors with gradual loads through which they may increase their resilience to stressors brought about by professional sport. Regular trainings allows for shaping competitors' resistance to certain, discipline-specific stressful stimuli. Additionally, on the course of developing techniques to control behaviour under stress, competitors learn effective coping methods.

Over the last few years, stress coping has become one of the most significant issues taken on by researchers dealing with sport. Stress coping may be regarded in three categories: as a process, strategy and style (Heszen-Niejodek, 2000; Wrześniewski, 2000; Strelau et al., 2005). The term process concerns the whole of a complex and dynamic activity undertaken in the face of a stressor, lasting throughout its presence (frequently long-term, e.g. chronic disease) and changing according to the development of the stressful situation. Strategy is an element of coping process. It includes specific activities and reactions undertaken by a person in a particular stressful situation. Eventually, coping style determines individual tendencies to cope with stress in a certain way. It describes relatively constant, habitual behaviour people exhibit in a stressful situation.

The concept of coping which is most frequently exploited in sport is the theory coined by Roth and Cohen (1986), which determines two categories of stress coping strategies: *approach* and *avoidance* (e.g., Anshel & Wells, 2000; Anshel, 2001; Anshel, Raviv & Jamieson, 2001; Puente-Diaz & Anshel, 2005; Anshel & Sutarso, 2007). Polish research most frequently refer to the stress coping styles concepts created by Endler and Parker, the authors of Coping Inventory for Stressful Situations (CISS, 1990; Endler, Parker & Butcher, 1993) as well as strategies distinguished by Carver and Scheier (1994).

The currently applied tools primarily allowed to examine the general life situation, still did not include the specific situation of an athlete, who simultaneously experiences stress related to daily hassles and sport. Moreover, these questionnaires did not consider the stress coping techniques applied by sportspeople, which are part of more and more commonly employed mental trainings. From the practical perspective, the activities aimed to increase the ability to cope stress may regard both psychological aspects (e.g., changing the appraisal of one's competence and the difficulty of the task they are about to approach) and physiological state of the body (e.g., relieving body tension). The techniques, which are frequently employed by athletes, combine both areas of human functioning using feedback between the conducted appraisals and the measured physiological state (i.a., through biofeedback; Nowicki, 2010). The relaxation activities, for example, use the influence of relieving muscle tension and calming breathing pattern and heartbeat on the general state of calmness and the feeling of mental comfort. The relaxation of muscles and mind increases the ability to focus and boosts the effectiveness of cognitive processes which makes relaxation training a base for training further skills during sport mental training (Nowicki, 2004; Weinberg & Gould, 2011).

The inability to access Polish tools for measuring stress coping strategies with regards to competitions in various sport disciplines has led us to working out such a method. This paper aims to describe the construction process and the psychometric properties of SR3S Questionnaire (*Sport Stress Coping Strategies*) for measuring the coping strategies related to stress experienced during a sport event.

The course of tool construction

The SR3S questionnaire was created according to exploratory strategy. The items were collected from the review of various tools for measuring stress, including:

a) Polish and English – regarding stress in general: CISS (Strelau et al., 2005), COPE (Juczyński & Ogińska-Bulik, 2009), SACS (Hobfoll, 2006),
b) English – designed for sport environment:
   - The Recovery-Stress-Questionnaire for Athletes (RESTQ-Sport; Kellmann & Kallus, 2001),
   - State Anxiety Test (SAT; Weinberg & Gould, 2011),
   - Coping Style in Sport Inventory (CSSI; Anshel, Kang, & Miesner, 2010).

Statements which proved ambiguous or did not match sport situation were eliminated. A 108-item version underwent validity analysis through a panel of experts. The answers used a 5-step scale: 1 – invalid statement, 2 – slightly matching statement, 3 – moderately matching statement, 4 – fairly matching statement, 5 – valid statement. Kendall's *W* coefficient was used to reject items of mean value lower than 3,5 and extreme values of standard deviations. Eventually, 54 items were formulated.

Pilot study

This version of the questionnaire was used to carry out a pilot study in a group of 142 athletes representing various disciplines. A high Cronbach alpha coefficient of .885 was obtained. Further on, the data was analysed after removing items which revealed low discriminatory power and, thus, lowered the value of this coefficient. Eventually, 6 items were rejected which enabled to obtain the internal consistency of .895.

The obtained values of Keiser-Mayer-Olkin test (KMO = .722) indicated a moderate quality of the data which allowed to carry out a factor analysis of the pilot version of the questionnaire. Based on scree analysis a five-factor solution was selected. Varimax standardized rotation was applied. The following factor were determined: Aiming at goals, Seeking support, Planning/focusing on action, Diverting attention from the problem, Applying techniques. At this stage of the analysis the authors rejected the items which loaded similarly to two or more factors or revealed low values of factor loadings for all factors as well as those which did not match with regards to their content (e.g., "I sleep more than usually"). Due to

the rejection of a great number of items concerning mental techniques employment, four new statements were added (items 5, 14, 20, 27). Eventually, 30 items were chosen for validation studies in total. The statements were reformulated from present tense to past tense, as such a form was assumed to better correspond with the circumstances of filling out the questionnaire (asking about the stress during competition is more likely to refer to past event as, in case of the majority of sports, it is impossible or unethical to examine an athlete's feelings and experiences during the competition).

Main study

The main study, aimed to analyze the reliability and validity, was carried out in a group of 244 sportspeople training one of the following sport disciplines: water (kayaking and rowing), combat (judo, taekwondo), team sports (football, handball, volleyball) and shooting.

A high Cronbach's alpha coefficient of .83 was obtained. The authors decided to reject 4 items (11, 18, 23, 27) of discriminatory power below .20, which insignificantly increased the reliability coefficient to .85 (Table 1). The first three statements referred to avoidant strategies connected with diverting attention from the problem and the last statement – to unreal conviction about the influence of thinking on the possibility of loss.

Table 1. The analysis of reliability at particular stages of psychometric preparation of SR3S Questionnaire for the main study

	Ist stage – first reliability analysis		IInd stage – after removing items		IIIrd stage – after factor analysis	
Item No.	Item-Tot. Correl.	Alpha when removed	Item-Tot. Correl.	Alpha when removed	Item-Tot. Correl.	Alpha when removed
Q1	.26	.83	.27	.84	.30	.83
Q2	.52	.82	.54	.83	.56	.82
Q3	.39	.82	.37	.84	.38	.83
Q4	.39	.83	.42	.84	.41	.83
Q5	.36	.83	.34	.84	.31	.83
Q6	.51	.82	.51	.83	.51	.82
Q7	.41	.82	.42	.84	.42	.83
Q8	.38	.83	.40	.84	.41	.83

cont. table 1

Q9	.29	.83	.29	.84	X	————
Q10	.36	.83	.37	.84	.37	.83
Q11	.10	.83	X	————	————	————
Q12	.40	.82	.40	.84	.40	.83
Q13	.43	.82	.43	.84	.42	.83
Q14	.36	.83	.36	.84	X	————
Q15	.28	.83	.25	.84	X	————
Q16	.46	.82	.45	.84	.46	.82
Q17	.55	.82	.54	.83	.51	.82
Q18	.17	.83	X	————	————	————
Q19	.41	.82	.40	.84	.40	.83
Q20	.48	.82	.47	.83	.45	.82
Q21	.32	.83	.29	.84	X	————
Q22	.41	.82	.42	.84	.43	.83
Q23	-.01	.84	X	————	————	————
Q24	.41	.82	.43	.84	.45	.82
Q25	.37	.83	.37	.84	.36	.83
Q26	.36	.83	.38	.84	.36	.83
Q27	.19	.83	X	————	————	————
Q28	.37	.83	.39	.84	.34	.83
Q29	.20	.83	.24	.84	.23	.83
Q30	.24	.83	.27	.84	.24	.84
		α = .831		α = .848		α = .834

Note: X – statement rejected, Item-Tot. – the correlation between a particular item and the total summary result (without a given item).

Subsequently, the 26 items underwent a test for sampling adequacy (KMO = .785). The obtained results indicated a moderate quality of the data which allowed for carrying out factor analysis. Based on the scree plot (Figure 1), Varimax factor analysis standardized for 4 and 5 factors was carried out. Regardless of the number

of factors, certain pool of items loaded similarly to 4 factors. After rejecting the items (the same statements in both cases: 9, 14, 15 and 21) which returned factor loadings lower than .40 in all factors or loaded equally high to two or more factors or their factor loadings were unstable (loads varied significantly with regards to changing solution), 22 items remained. Ultimately, a 4-factor solution was chosen as it allowed for explaining 53% of the variances (Tables 2 and 3).

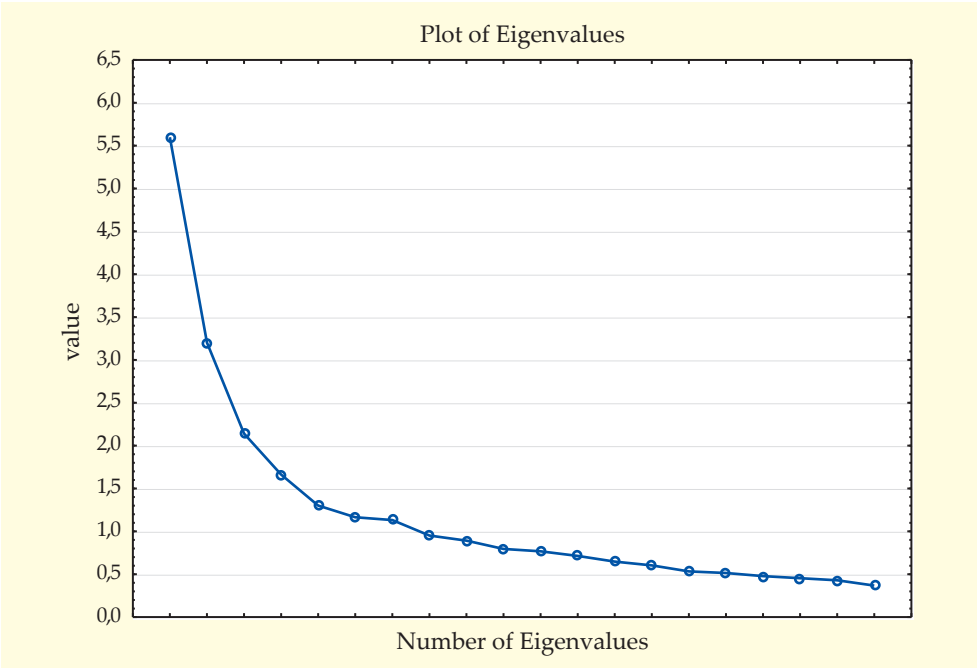

Figure 1. Scree plot for the SR3S items

Table 2. Eigenvalues and the percentage of explained variation in 4-factor solution

	Eigenvalue	% of total variance	Cumulated eigenvalue	Cumulated %
1	5.28	22.96	5.28	22.96
2	3.17	13.79	8.45	36.74
3	2.13	9.27	10.58	46.02
4	1.47	6.39	12.05	52.41

Table 3. Factor loadings in 4-factor solution

No. and content of a statement	Original content of a statement	F 1	F 2	F 3	F 4
Q4 I used best efforts to achieve victory.	Dokładałem wszelkich starań, aby odnieść zwycięstwo.	.58	.02	.06	.39
Q26 I acted dynamically and was trying to take the opponent by surprise.	Działałem dynamicznie, starałem się zaskoczyć przeciwnika.	.80	.08	.04	.10
Q28 I was dreaming of victory.	Marzyłem o zwycięstwie.	.70	.01	-.00	.24
Q29 I was tough and didn't give up.	Byłem twardy/a i nie dałem się.	.57	-.09	.06	.13
Q30 I was trying to use the weaknesses of the opponent.	Starałem się wykorzystać słabości przeciwnika.	.86	-.03	.03	-.04
Q1 I talked to peers who train with me.	Rozmawiałem z kolegami trenującymi ze mną.	.11	.57	-.12	.10
Q8 I talked to someone who would have helped me solve the problem in particular way.	Rozmawiałem z kimś, kto mógłby w konkretny sposób pomóc mi w poradzeniu sobie z problemem.	-.13	.72	-.00	.21
Q10 I turned to someone for emotional support.	Zwracałem się do kogoś o wsparcie emocjonalne.	.04	.70	.09	-.04
Q12 I talked to someone about what I felt.	Rozmawiałem z kimś o tym, co czuję.	.03	.70	.18	-.02
Q16 I sought advice on what to do from people who had similar experiences.	Poszukiwałem rady, co należy zrobić u osób, które miały podobne doświadczenia.	.01	.72	.14	.10
Q22 I sought advice from older, more experienced competitors or coach.	Radziłem się starszych, bardziej doświadczonych zawodników lub trenera.	-.01	.69	.00	.20
Q24 I sought support from teammates, other contestants, coach, psychologist, etc.	Szukałem wsparcia u kolegów z drużyny, innych zawodników, trenera, psychologa itp.	-.10	.77	.02	.17
Q3 I applied mental training (imagery, relaxation) to focus on something else.	Używałem treningów mentalnych (wyobrażeniowych, relaksacyjnych), żeby skupić się na czymś innym.	-.11	.07	.75	.26

cont. table 3

Q5 I did something which brings me luck (e.g. performed a ritual).	Robiłem coś, co przynosi mi szczęście (np. wykonywałem rytuał).	.27	.04	.73	-.07
Q19 I applied mental training (imagery, relaxation) to calm down.	Żeby się uspokoić, stosowałem trening mentalny (wyobrażeniowy, relaksacyjny).	-.09	.08	.72	.30
Q20 I performed a pre-competition ritual which helps me tame my emotions.	Wykonywałem rytuał przedstartowy, który pozwala mi opanować emocje.	.14	.07	.77	.20
Q2 I set a plan of action.	Ustalałem plan działania.	.27	.26	.20	.53
Q6 I was thinking about how to cope best with the situation.	Zastanawiałem się nad tym, jak najlepiej poradzić sobie z tą sytuacją.	.12	.11	.23	.69
Q7 My actions focused on doing something with the situation.	Moje działania koncentrowały się na tym, aby coś z tą sytuacją zrobić.	.06	.14	.03	.68
Q13 I calmed down and quickly planned further actions.	Uspokajałem się i wtedy szybko planowałem następne działania.	.10	.04	.23	.60
Q17 I was wondering what to do to win.	Zastanawiałem się, co muszę zrobić, żeby wygrać.	.35	.17	.14	.55
Q25 I considered all possibilities.	Rozważałem wszystkie możliwości.	.03	.16	-.09	.63

After a content analysis of the items allotted to particular factors, proper names for the obtained scales ware chosen (Table 4). The accepted solution conforms with the factor analysis carried out for the pilot study. Four of the factors determined in the preliminary analysis agreed almost fully. Discrepancy was observed with regards to two statements which were allotted to different factors than initially based on their loading values. The shift occurred in the scales of Planning/focus on activity and Setting on the goal/victory, which the authors also regarded as more content adequate.

Moreover, considering the fact that the subject literature distinguishes various types of support (Sęk & Cieślak, 2011), a secondary factor analysis was carried out for the factor Seeking support. The applied standardized Varimax rotation analysis isolated two subscales. The analysis of the items' content led to an assumption that

they concern respectively: emotional support (item 10 and 12) and informative-instrumental support (the remaining items) (Table 5).

Table 4. Distinguished scales of SR3S questionnaire and their reliability

	Name of factor	Items	Reliability
F1	Setting on the goal/victory	4, 26, 28, 29, 30	α = .780
F2	Seeking support	1, 8, 10, 12, 16, 22, 24	α = .831
	Emotional	1, 8, 16, 22, 24	α = .804
	Informative-instrumental	10, 12	α = .751
F3	Applying mental techniques	3, 5, 19, 20	α = .777
F4	Planning/focus on activity	2, 6, 7, 13, 17, 25	α = .761

Table 5. Factor loadings for the subscales of Seeking support scale

	F 2.1	F 2.2
Q1	.62	.12
Q8	.59	.48
Q16	.73	.26
Q22	.87	.07
Q24	.68	.41
Q10	.17	.88
Q12	.20	.84
Explained variance	2.54	1.97
Proportion of total variance	.36	.28

Due to the unequal number of items in particular scales of the questionnaire (which inhibits a simple comparison of raw results obtained through summing athletes' responses), it is recommended to calculate standardized results, dividing each sum by the number of items included in particular factors. The obtained weighted mean values ought to allow for making proper comparisons.

Psychometric properties of the questionnaire

The reliability of the final version of the questionnaire is high and equals .83. The value of Cronbach's alpha for particular scales ranges from .75 and .83 (Table 1).

Additionally, the SR3S questionnaire underwent factor and criterion validity. The results of the exploratory factor analysis have been presented above. The authors agreed that the most empirically and content appropriate is the four-factor solution with two subordinate factors in one of the scales (Table 4). The criterion validity of the tool was verified through comparing the SR3S Questionnaire with other tools for measuring the variables which, according to the theory, ought to be related to stress coping strategies: cognitive appraisal, coping styles and type D personality (Łosiak, 2007). The following questionnaires were used in this respect:

- Stress Appraisal Questionnaire – version A for assessing the appraisal of particular stressful situation (here related to sport competitions) and version B – to assess the dispositional stress appraisal (Włodarczyk & Wrześniewski, 2010),
- Coping Inventory for Stressful Situations – CISS (Endler & Parker, 1990, adapted by Strelau et al., 2005),
- DS 14 Scale: adapted by Ogińska-Bulik, Juczyński and Denolett (Juczyński & Ogińska-Bulik, 2009).

As presumed, task-oriented strategies (*Setting on the goal/victory* and *Planning/focus on activity*) show positive correlation with task-oriented coping style and positive appraisal of a stressful situation as a challenge and negative correlation with appraising a stressful situation as a loss and traits of type D personality. The *Seeking support* scale shows positive correlation with coping styles different than task-oriented and appraising of a stressful situation as a threat or loss. The last scale – *Applying mental techniques* showed positive correlation with all coping styles (apart from the ESA subscale) as well as with the dispositional stress appraisal as a challenge leading to undertaking activity. The positive correlation with negative emotionality and applying techniques ($R = .15$; $p < .05$) seems surprising. Nevertheless, referring to particular items included in this scale, it seems reasonable that individuals characterised by a higher tendency to experience negative emotions may also more frequently undertake activities aimed at controlling their emotions (e.g., relaxation trainings) rather than focus on achieving a previously set goal. It is noteworthy that the obtained correlations are rather low or very low and do not allow for generalizations (Table 6).

Table 6. Criterion validity indicators for SR3S Questionnaire (significant correlation coefficients of Spearman's ranks, $N = 240$)

	Setting on the goal/victory	Seeking support	Applying mental techniques	Planning/ focus on activity
Competition appraisal:				
Threat		.22***		.14*
Harm/loss				
Challenge/activity	.24***			.33***
Challenge/passivity	.14*			
Dispositional appraisal:				
Threat		.18**		
Harm/loss	-.20**	.16*		
Challenge/activity	.23***		.21**	.34***
Challenge/passivity				
Coping styles				
TOC	.29***		.28***	.41***
EOC		.23***	.20**	
AOC		.38***	.19**	
ESA		.23***		
SSR		.41***	.15*	
Type D personality				
NA	-.24***		.15*	
SI	-.33***			-.20**

Note: TOC – task-oriented coping, EOC – emotion-oriented coping, AOC – avoidance-oriented coping, ESA – Engagement in substitute activity, SSR – seeking for social relationships, NA – negative affectivity oraz SI – social inhibition; * $p < .05$, ** $p < .01$, *** $p < .001$.

Results

The analysis of the results obtained by athletes in the main study checked what coping strategies dominated among the examined contestants. The results were elaborated from the data obtained from 193 sportspeople representing similarly large groups of disciplines (shooting – 33 people, rowing – 32, combat sports – 32,

football – 31, volleyball – 32, handball – 33). The Friedman's ANOVA analysis revealed significant differences between particular categories of strategies (chi² ANOVA (N = 193, df = 3) = 147.66; p < .001). In this respect, the significance of the differences between the frequency of applying particular strategies was verified by a Wilcoxon signed rank test. With regards to the strategies of coping stress during competitions, athletes were significantly most frequently aimed at achieving the previously set goal or victory (M = 3.89; SD = .83; difference with regards to the strategy Planning/acting: Z = 5.97; p < .001). The least often applied strategies during stressful competitions, of similar frequency, were strategies related to seeking support (M = 2.76; SD = .15) and applying mental techniques (M = 2.62; SD = .30) (Table 7).

Table 7. Descriptive statistics for coping strategies applied during competitions by the examined athletes

Coping strategies	*M*	Min.	Max.	*SD*	Skewness	Kurtosis
Setting on the goal/victory	3.89	2	5	.83	-.54	-.68
Seeking support	2.76	1	5	.92	.15	-.63
Applying mental techniques	2.62	1	5	1.11	.30	-.83
Planning/focus on activity	3.51	1	5	.75	-.33	.22

Furthermore, a cluster analysis was carried out to avoid the influence of averaging results on the description of the group. Based on the agglomerative analysis and verification of variances of the obtained clusters (Table 8) it turned out that the best solution is to distinguish five characteristic ways of responding to statements concerning coping strategies during stressful competitions (Figure 2).

Table 8. The results of variance analysis for the division of athletes into three clusters according to the coping strategies during competitions

Coping strategies	SS Effect	*df*	MS Effect	*df*	*F*
Setting on the goal/victory	79.81	4	53.45	188	70.18*
Seeking support	90.90	4	70.98	188	60.19*
Applying mental techniques	151.71	4	84.80	188	84.08*
Planning/focus on activity	42.03	4	65.92	188	29.97*

Note: * p < .001.

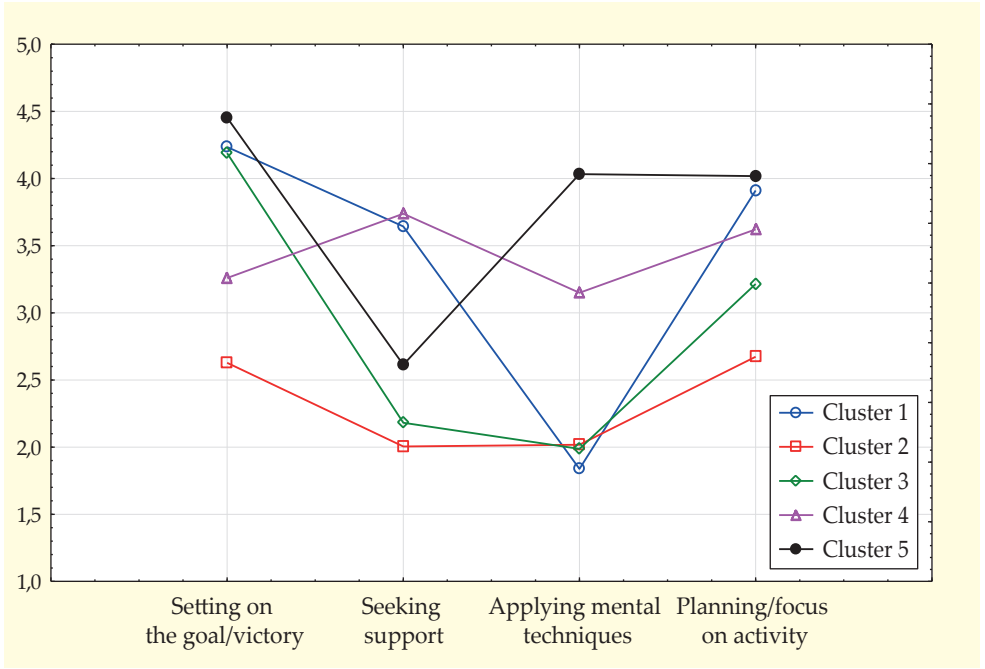

Figure 2. The graph of mean values for clusters of contestants who similarly cope stress during competitions

Normal distribution of results within each cluster allowed to compare mean values through the parametric ANOVA test and post-hoc analysis (Tukey HSD for unequal N). Significant differences between the mean values in groups appeared with respect to strategies. Setting on the goal was significantly higher in groups 1, 3 and 5 than in groups 2 and 4. The biggest number of contestants sought support in groups 1 and 4 and the least number – in groups 2, 3 and 5. Mental techniques were most often applied in group 5, then 4 and significantly less frequently in groups 1, 2 and 3. Planning and focusing on activity more often appeared in groups 1, 4 and 5, slightly less often in group 3 and the least frequently in group 2 (Table 9).

Table 9. Descriptive statistics for competition stress coping strategies in particular clusters

Coping strategies	Cluster									
	1		2		3		4		5	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Setting on the goal/victory	4.24	.60	2.63	.38	4.19	.48	3.26	.70	4.45	.50
Seeking support	3.64	.63	2.01	.72	2.18	.49	3.74	.51	2.61	.73
Applying mental techniques	1.84	.55	2.02	.92	1.99	.68	3.15	.61	4.03	.60
Planning/focus on activity	3.91	.54	2.67	.57	3.21	.69	3.62	.55	4.02	.53

These results prove that the first group of athletes (n = 34, around 18% of all respondents) most often coped stress using strategies aimed at goals, subsequently, strategies focused on planning and acting or seeking support and least frequently – mental techniques. The second group (n = 28, around 15%) declared the least number of applied strategies of all respondents. They most often used strategies aimed at goals and focused on planning/acting than applied techniques or sought support. The third, most numerous group (n = 56, around 29%), significantly most often chose strategies aimed at goals, moderately – planning/acting and the least frequently – seeking support and applying mental techniques. The fourth group (n = 30, around 16%) most frequently applied strategies related to seeking support and planning than aiming at goals or using mental techniques. The last group (n = 45, around 23%) most often coped through focusing on goals and least frequently sought support.

Discussion

The insufficient accuracy of the tools used for examining athletes was the main cause for creating the questionnaire described in this work. It is frequent in studying the area of sport to apply methods regarding everyday live aspects and referring the information to the functioning of contestants. The conducted study allowed to construct a tool which considers the specific situation of an athlete, who experiences both stress connected with everyday life and sport. The described questionnaire also stands out due to the fact it regards applying techniques, which are a part of mental trainings (e.g., relaxation trainings).

The SR3S allows to assess the frequency of applying included strategies of coping stress during sport competitions. It is primarily designed for adult competitors regardless of the type of discipline. It may be assumed that the psychometric parameters of SR3S Questionnaire allow to use this tool in scientific studies concerning sport psychology.

A slight limitation to the presented analysis is the use of Cronbach's α as the estimator of reliability. Zinbarg, Revelle, Yovel and Li (2005) point out the underestimation of reliability by alpha, especially with regards to heterogeneous tests, and recommend using McDonald's ω. Nevertheless, based on the review by Ciżkowicz (2018), it may be assumed that in case of the constructed test the underestimation of reliability by alpha coefficient ought to be insignificant compared to omega according to the presumption that coping strategies are the elements of coping process (a chain of strategies changing in time).

It is noteworthy for further research to acknowledge that the obtained factor structure contains a subscale Seeking informative-instrumental support which involves only two test items. It is suggested to verify the real reliability (beyond construction trials). In order to use the questionnaire in psychological practice, it ought to undergo a further stage of research – standardization. The presented version is a basis for further analyses.

Certain doubts appear with regards to the sense of creating questionnaire measurements in sport. They are related to the limitations of self-descriptive questionnaires. The main premise of these methods is that people are able to exactly reconstruct their previous behaviour. It bears the possibility of mistakes, implicit statements and distortions. In this respect, Stone et al. (1998) suggested that measuring stress coping styles ought to use modern technologies and momentary reports (*Ecological Momentary Assessment*, EMA), which involve recording data on a palm-top directly after encountering a stressor. Studies confirmed the differences with regards to retrospective measurement after a certain amount of time. The respondents tended to overestimate behavioural coping methods in their self-description as well as decreased the amount of cognitive strategies. Due to the difficulty to record anything during a sport event, Nicholls and Polman (2008) suggested the method of loud speaking for examining golf players. Nevertheless, the authors themselves see the limitations of this method. Reporting information directly seems to be proper for measuring acute stress, however, it cannot discover long-lasting and more complex sources of stress. Loud speaking allows to obtain information about the way of thinking or behaving during the measurement omitting coping methods which appear later on (e.g., positive reformulation of the sense of an event) and aspects concerning a broader perspective (e.g., the influence of extra-sport events on an individual). These methods seem original, yet difficult to implement in various sport disciplines. A widely applied alternative to self-descriptive questionnaires are structuralized interviews (i.a., Rawstorne, Anshel & Caputi, 2000; Tamminen & Holt, 2010; McDonough et al., 2013). These methods, however, are extremely time-consuming and require respondents' trust. Therefore, questionnaires seem to be one of the most easily accessible and favourable research methods. However, their limitations ought to be borne in mind while interpreting their results and use only methods of high psychometric parameters.

The analysis of the athletes' results showed that the respondents declared their preference for strategies related to focusing on goals and victory during sport

events. Secondarily, they reached for strategies based on planning and focusing on action. Following Mroczkowska (2010), one could reflect on the incentives that motivate modern sportspeople to engage in sport. External rewards in the form of medals, cups or financial gratification are common in sport and their amount and value account for a measure of success. Focusing on the victory as a form of coping stress may be a manifestation of such a tendency in sport, where competitors only find the sense of undertaken efforts in the material (e.g., awards) and immaterial (e.g., social prestige) effect. Nevertheless, it is noteworthy that maladapted forms of external motivation may lead to lowering or eliminating competitor's internal motivation. The key role, in this respect, is played by the way of their application, for example, by the coach or the boards of clubs (Świątnicki, 2001; Mroczkowska, 2010).

It was also observed that athletes rarely applied mental techniques which are included in the mental training used by sport psychologists. The reason for it remains uncertain. It may lie in the lack of willingness or need for their use or rather in the unfamiliarity and inability of sportspeople to use them. Conversations with competitors held during the studies point rather to the two latter possibilities. It accounts for an interesting direction of future research determining the demand of athletes for the use of mental trainings or work with a sport psychologist. Studies over the use of such methods prove their effectiveness in improving the quality of functioning under strong emotions (Dhiman & Bedi, 2010; Nowicki, 2010; Karimian et al., 2010; Laaksonen, Ainegren & Lisspers, 2011).

On account of the above-mentioned issues, it ought to be stated that the examined group of athletes displays a tendency to apply effective coping methods in stressful situations and use these predispositions with regards to a sport situation. It is an optimistic assumption, taking into account the significance of the ability to control emotional states during sport rivalry and the importance of effective stress coping for the health of a unit (Lazarus, 2006; Karimian et al., 2010). Previous studies, however, indicate that coping oriented on task and aimed to solve a problem are not always the most effective styles with regards to all situations (Johnston & McCabe, 1993; Anshel, Porter, & Quek, 1998; Anshel & Anderson, 2002). An athlete ought to be equipped with a large range of preventive behaviours which would enable them to use the most effective methods (Martinent & Nicolas, 2016). Likewise the obtained results of our study suggest frequent use of various strategies by the majority of athletes. Moreover, the transactional theory of stress assumes that more flexible coping ought to bring more adaptative effects. It is worthwhile that further research verify the significance of flexibility to apply various strategies adapted to the nature of stressful situations (*coping flexibility*). Only few studies have been carried out in this respect so far (Kato, 2012; Cheng, Lau, & Chan, 2014). With regards to a sport situation, researchers still seek confirmation of the *goodness-of-fit hypothesis*, which presumes that the effectiveness of preventive activities depends on the proper matching of the appraisal of stress to coping (Gan & Anshel, 2006; Poliseo & McDonough, 2012).

Conclusions

Summarizing the deliberations above, the following conclusions can be drawn:

1. The conducted study contributed to the construction of a tool adapted to the athletes' situation which allows to scientifically examine the preferences of choosing strategies for coping stress in a sport situation. Once standardized, the questionnaire may also be useful for professionals working with sportspeople as it may allow to assess individual predispositions for coping stress. This may help coaches and sport psychologists properly develop competitors' psychological resistance.
2. Athletes, as a group, tend to apply task-oriented methods of coping regarded as the most adaptative. The examined competitors hardly applied techniques included in the mental trainings carried out by sport psychologists. This may suggest the need for competitors' work with sport psychologists.

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PSYCHOMETRYCZNE OPRACOWANIE KWESTIONARIUSZA SR3S (STRATEGIE RADZENIA SOBIE ZE STRESEM W SPORCIE)

Streszczenie. Celem artykułu jest opisanie procesu konstrukcji kwestionariusza SR3S (Strategie Radzenia Sobie ze Stresem w Sporcie). Przedstawione zostaną również dane dotyczące właściwości psychometrycznych kwestionariusza. Rezultaty pochodzą z dwóch badań – pilotażowego oraz głównego, obejmujących łącznie ok. 320 zawodników trenujących różne dyscypliny sportowe (zespołowe i indywidualne). Przeprowadzone badania pozwoliły na zastosowanie analizy czynnikowej. Na jej podstawie zaproponowano wstępny podział na podskale obejmujące grupy strategii radzenia sobie (nastawienie na cele/zwycięstwo, poszukiwanie wsparcia, stosowanie technik mentalnych, planowanie/działanie). Badani sportowcy najczęściej stosowali zadaniowe metody radzenia sobie ze stresem. Uzyskane wyniki pozwalają stwierdzić, że kwestionariusz SR3S charakteryzuje się przynajmniej zadowalającymi parametrami psychometrycznymi.
Słowa kluczowe: radzenie sobie ze stresem, sportowcy, właściwości psychometryczne

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