

Training exercise performance questionnaire (TEPQ) – development study. A study on sportsmen from branches of Judo, Taekwondo, Karate

Authors' Contribution:

- A** Study Design
- B** Data Collection
- C** Statistical Analysis
- D** Manuscript Preparation
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Abstract

Background and Study Aim:

One of the factors ensuring individual development in training is proper and efficient training. The study aims to measure the training performance of sportsmen from branches of Judo, Taekwondo and Karate.

Material/Methods:

The training performance scale which is a Likert scale consisting of 30 items was used for the purpose of data collection. The method was applied to 283 sportsmen (191 male and 92 female) in the initial application. Descriptive statistic techniques, factor analysis, cronbach alpha, analysis of variance, corrected item-total correlation and Pearson's correlation tests were applied.

Results:

After the analyses, the items that did not work properly were removed and the items were reduced to 18. The second application was carried out on 237 sportsmen. In this final application, the scale has got its final form by 2 factors of 16 items (Very Ambitious Training and Training by Obligation).

Conclusions:

The reliability of the scale is acceptable (Cronbach's Alpha: 0.76). Based on the results of the test performed on the scale, it was determined that the scale was reliable and valid and training performance scale can be used to predict the sportsman's training performance success.

Key words:

training performance scale • very ambitious training • training by obligation • scale development

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BACKGROUND

One of the factors ensuring individual development in training is proper and efficient training. And training performance can be described as the sum of all effort made towards achievement during the performance of a sportive task [1,2]. In this respect, performance must be considered as a whole along with factors during competition or contest which have relatively short-term effects on the results and evaluated accordingly.

The reason behind the complex nature of training performance is the multitude and diversity of factors. These factors may affect training performance positively or

negatively and may be classified as "Very ambitious training" and "Training By Obligation [3,4].

Very ambitious training is defined as making the hardest effort to comprehend what is done in the training with all its aspects, to give meaning to it in mind, to strive to do the best and to show the best performance. Training By Obligation is defined as training without comprehending what is done in the training with all its aspects, without giving it any meaning, without making the hardest effort to show the best performance and training for the sake of it [5,6].

As is known, items of psychological scales are stimulants bringing the intrinsic characteristics to the surface

Training performance scale
– the scale which measures training performance of sportsmen.

Very ambitious training
– training willingly.

Training by obligation
– training reluctantly.

Scale development
– creating a scale to measure psychometric characteristics of individuals.

[7–11]. Scale items which are behavioural indicators of intrinsic characteristics is closely related to the context of the behaviour to be measured. In this context, it is obvious that the training performance must be different from the performance in other environments. It is a reasonable approach that psychological traits of sportsmen in sportive environment during competition and training will affect their sports achievements and training performance. In new scale developments in individual sports in particular, the evaluation of individual performance required new scale studies.

Many researches have been made on training performance [12–14]. However there is not a scale designed for training performance. Performance displayed especially in individual sports (Judo, Taekwondo, Karate) training will be a significant factor for success. In this respect, the measurement and evaluation of training performance may contribute a lot to sports sciences and coaches. That no research was discovered in the literature review performed in this field is the best indicator of the fact that the scale development is important.

MATERIAL AND METHODS

Participants

283 sportsmen (191 male and 92 female) from three individual sports branches (Judo, Taekwondo, Karate) participated in the initial application study. Average age of male sportsmen was 21.07 ± 4.61 and average age of female sportsmen is 20.74 ± 3.98 .

237 sportsmen (154 male and 83 female) from three individual sports branches (Judo, Taekwondo, Karate) participated in the second application study. Average age of male sportsmen was 21.24 ± 5.01 and average age of female sportsmen is 20.52 ± 3.60 .

Data Analysis

The data was analysed in SPSS 16 package program by descriptive statistic techniques, factor analysis, Cronbach Alpha, analysis of variance, corrected item-total correlation and Pearson’s correlation test.

RESULTS

Preliminary preparation and the setting of scale items

It was decided that the training performance must have two sub-dimensions and the scale items must be made up based on the tendency of the sportsmen towards “Very Ambitious Training” and “Training by Obligation”. Taking

the traits specified by a total of eight expert researchers consisting of two sports sciences experts, two psychology experts, two sports psychology experts and two psychometric experts, “30” Likert-type statements were written and given its final form. It was decided that those answering the scale items have options from “Never” to “Always” and its scoring be made from “0” to “4”.

Initial application of the scale

Branches of sportsmen that have participated in the first application and distribution by years can be seen in Table 1.

Table 1. Sports branch of sportsmen participating in the initial application and distribution by age.

	Judo	Taekwondo	Karate	Total
Male	80	53	58	191
Female	23	45	24	92
Total	103	98	82	283

Based on the results of item-total correlations carried out by Pearson Product-Moment Correlation Technique in order to select items on the data obtained from the exact application of the scale to the sportsmen, all items were observed to be statistically significant to the level of $\alpha = .0001$, but some items were observed to be below the significance level of .35. According to the initial application data, the internal consistency coefficient (Cronbach Alpha) of the scale was found .79. However, due to the fact that all items have a medium-level correlation coefficients and structural characteristics of the scale was to be examined, factor analysis techniques were also used. When factor loads were examined after the Principal Components Factor Analysis was performed, it was observed that the scale items tend to group under two factors and items that were below .40 in terms of factor loads were removed. Therefore, 30 items in the initial application of the scale were reduced to 18.

Second application of the scale

Branches of sportsmen that have participated in the second application and distribution by years can be seen in Table 2.

Table 2. Sports branch of sportsmen participating in the second application and distribution by age.

	Judo	Taekwondo	Karate	Total
Male	67	49	38	154
Female	27	38	18	83
Total	94	87	56	237

Table 3. Factor analysis of the scale and item correlation values.

First factor	Values	Second factor	Values
1. I only carry out the program that my coach gave me during the training.	.563	3. My aim in training is to prepare for the competition by training as little as possible.	.585
2. I train enough to achieve the goal set in the training.	.579	5. I find it pointless to learn certain techniques which I will not be using in the competition.	.503
4. I follow the literature and recent developments relating to the sports branch I am in.	.481	6. Training gives me a deep feeling of mental and physical fatigue.	.528
7. New techniques I learn in the training gets me going more.	.601	9. My training performance is at the minimum level.	.630
8. I set myself new goals in order to display the best performance in each training..	.653	11. I do not like trainings much. Competition is more important to me.	.619
10. I try hard to apply all the techniques that my coach recommends in the training.	.559	15. Exercising much and in detail in the training is a waste of time.	.536
12. Displaying the best performance in the training gives me the feeling of personal satisfaction.	.542	16. I always want the trainings end as soon as possible.	.628
13. I work hard in the training.	.497		
14. I try a new technique that I learned in the training until I do it perfect.	.536		

The correlation between the subscales and the total score is given below.

Although item-total correlation coefficients of the second application data came out statistically significant for all items, 2 items were removed from the scale because these 2 items out of a total of 18 were below the significance level of .40. In the factor analysis carried out after the removal of these items, it was observed that the items grouped under two factors and these two factors explained 44.7% of total variance. When the items grouped under two factors are examined, it can be seen that the items under the first factors consisted of items measuring the “Very Ambitious Training” dimension and items under the second factor consisted of items measuring the “Training by Obligation” dimension. Of 16 items making up the final form of the scale, 9 items (items 1,2,4,7,8,10,12,13,14) measure the “Very Ambitious Training” dimension and 7 items (items 3,5,6,9,11,15,16) measure the “Training by Obligation” dimension.

When Table 4 is examined, the correlation coefficients between the sub-scales support the fact that two factors are the sub-dimensions of the same basic structure that are both apart from and related to each other.

Reliability of training performance scale

The scale measures the training performance as a whole and reliability coefficients for each sub-scale were calculated using Cronbach’s Alpha [15,16], which is an internal consistency coefficient because it consisted of two different sub-scales.

Table 4. Correlation of the training performance scale between sub-scales.

	Very ambitious training	Training by obligation
Very ambitious training	–	–
Training by obligation	.342*	–
Total	.670**	.798**

*p<.05; **p<.0001.

As can be seen in Table 5, the internal consistency coefficients of the scale are acceptable [17–19]. So, the scale is reliable.

Table 5. Internal consistency coefficients of training performance scale.

Very ambitious training	.73
Training by obligation	.78
Test total	.76

Validity of training performance scale

Factor analysis that is performed shows the construct validity of the scale and, given that the training performance is correlated to the competitive success, the criterion-related validity of the scale must be shown particularly by an appropriate criterion [11,20].

Table 6. Variance analysis related to the difference between sports branches in terms of total scale score.

Source of change	Sum of squares	Sd	Average square	F
Sports branches	1238.981	2	546.301	19.659**
Error	8634.721	235	42.582	
Total	9873.702	237		

** $p < .0001$.

Table 7. Variance analysis related to the difference between sports branches in terms of very ambitious training sub-scale.

Source of change	Sum of squares	Sd	Average square	F
Sports branches	406.673	2	147.632	21.730**
Error	1734.209	235	6.439	
Total	2140.882	237		

** $p < .0001$.

Table 8. Variance analysis related to the difference between sports branches in terms of training by obligation sub-scale.

Source of change	Sum of squares	Sd	Average square	F
Sports branches	286.691	2	128.768	6.438*
Error	4538.890	235	18.302	
Total	4825.581	237		

* $p < .05$.

In Scheffe test performed to determine between which sports branches there is a difference in total scale scores in Table 6, it was determined that there is a statistically significant difference between branches of karate and judo ($p < .0001$) and judo and taekwondo ($p < .0001$).

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DISCUSSION

This study aims to measure the training performance of sportsmen from branches of Judo, Taekwondo and Karate.

Although many scouting programs are being developed and adapted in order to evaluate the competitive performances of sportsmen and many scales are being developed and adapted in order to measure the moods of

sportsmen, no scale has been developed or adapted regarding training performance. Based on the results of the test performed on the scale, it was determined that the scale was reliable and valid.

Main, three branches were studied on in relation with the scale. Measurement and evaluation of the training performances of sportsmen of Judo, Taekwondo and Karate branches indicates the intensesness and sustainability of the training.

In contemporary sports sciences approach generally accepted today, very ambitious training is significant for the improvement of sportive performance. This brings forward the necessity that the coaches determine the individual differences of sportsmen and make a design as to how they should program the training. The will to train as opposed to such traits as intelligence, cognitive style and learning style which are claimed to be innate and unchangeable, can be defined as a trait that can be changed under the proper guidance of coaches.

Training performance scale can be used to predict the sportsman's training performance success and it is obvious that further detailed studies must be carried out. Especially the determination of the relationship between the scale items relating to coaches with the criterion variables and increasing the items relating to coaches can

be an option. On the other hand, with more advanced studies such as confirmatory factor analysis on the structural characteristics of the scale, the theoretical structure of the scale must be reinforced [21].

Although the results on the scale are at an acceptable level, it can be said that it must be improved for better adaptive values. Future studies will help to improve the scale in different cultures and environments.

CONCLUSIONS

There is no study relating to the scale in the literature. Such a study can make many contributions to

both sports psychology and the field of sports sciences. So, coaches, sports scientists, sports psychologists and sportsmen will be provided with more useful information. In academic terms, this scale will contribute to the improvement of studies. Validity and reliability findings from tests can ensure the extensive use of the scale and make a start on the achievement of specified benefits.

The research has shown that the need for new researches that will pave the way for more extensive studies. In an extensive research to be carried out after this, more samples will be provided and wider and homogeneous group will be formed to determine the validity and reliability for all sports branches.

**-TPEQ-
TRAINING EXERCISE PERFORMANCE QUESTIONNAIRE**

Each of the following statement defines a specific behaviour which you may exhibit as a sportsman. 4 options are available for each statement.

[a] Never; [b] Sometimes; [c] Usually; [d] Always

Please state your choice by marking the box with "X". Answer all items, even if you are not sure of any of them. There is no right or wrong answers in this questionnaire. For the success of this study, your answers must be free and honest.

Turhan Toros – Sports Psychologist (PhD)

- 1. Your sports branch.....
- 2. Your gender:
- 3. Your age.....
- 4. How long have you been doing this sport.....

	Never	Sometimes	Usually	Always
1. I only carry out the program that my coach gave me during the training.				
2. I train enough to achieve the goal set in the training.				
3. My aim in training is to prepare for the competition by training as little as possible.				
4. I follow the literature and recent developments relating to the sports branch I am in.				
5. I find it pointless to learn certain techniques which I will not be using in the competition.				
6. Training gives me a deep feeling of mental and physical fatigue.				
7. New techniques I learn in the training get me going more.				
8. I set myself new goals in order to display the best performance in each training.				
9. My training performance is at the minimum level.				
10. I try hard to apply all the techniques that my coach recommends in the training.				
11. I do not like trainings much. Competition is more important to me.				
12. Displaying the best performance in the training gives me the feeling of personal satisfaction.				
13. I work hard in the training.				
14. I try a new technique that I learned in the training until I do it perfect.				
15. Exercising much and in detail in the training is a waste of time.				
16. I always want the trainings end as soon as possible.				

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