

Trainer Evaluation Scale for Hearing Impaired Athletes

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Abstract: This study aimed to develop a valid and reliable measurement tool to determine trainer evaluation level of hearing impaired athletes. Researchers reported that the characteristics of a trainer were equally important as the athlete's. This aims a "Trainer Evaluation Form for Hearing Impaired" was prepared. The form was administered to a total of 221 hearing impaired athletes, 172 (77.8%) of whom were male and 49 (22.2%) of whom were female. Average age of the group was 24.40. In conclusion, data analysis indicated that the trainer evaluation scale for hearing impaired athletes, which consisted of 12 items, had a three-factor (technical, competition and social) structure and was provided valid and reliable evaluation of trainers by hearing impaired athletes. Trainers, who are role models for athletes, have an important role in displaying sportsman like conduct. In addition, evaluation of trainers by hearing-impaired athletes is of great importance in terms of illustrating the trainer-athlete relationships and determining appropriate behavior styles.

Key words: Hearing Impaired Athletes • Trainer Evaluation • Scale Development

INTRODUCTION

Hearing impaired athletes may have different expectations in their relationships with their trainers. Athletes might therefore consider their relationships with the trainers as good or bad according to their expectations of their trainers.

Some factors such as trusting to technical knowledge of the trainer or the management of trainer-athlete relationships also show variations according to expectations. When the working environment is completely appropriate, a trainer might be evaluated as an understanding, social and likable person. There might be differences between communication and impairment conditions of those who train hearing-impaired athletes. While some trainers do not hear, some can hear using a hearing aid and some have no hearing impairment. These conditions of the trainers are important factors in their communication with hearing impaired athletes. Variables such as training the athletes, advising tactics, communication and understanding athletes' psychological conditions might have positive or negative effects on trainer-athlete relationships.

Trainers are expected to guide the team and athletes when all factors are appropriate. Each behavior and decision of a trainer is firstly based on the wellbeing of the athlete and then on increasing the chance of the athlete or the team winning [1].

Woodman reported that the characteristics of a trainer were equally important as the athlete's [2]. Weinberg and Gould demonstrated that there were effective coaching strategies for athletes and trainers [3]. According to Weinberg and Gould, when athletes performed a movement or a technique accurately, they expect to hear praise and encouraging words from their trainers [4]. The researchers believed that, to develop effective training, trainers should often praise the athletes. It was reported that sending even only a small smile to the athletes as a reward reassures the athletes.

It was concluded that psychological factors were important in the trainer-athlete relationship and that trainers and athletes should recognize their personal characteristics to ensure consistent communication [5]. An athlete expects his/her trainer to have effective organizational skills and to organize him/her well for training and competitions. Zhang *et al.* [6] reported that variables such as appropriateness of competition program, the day and time of competition, weather and spectators are positively correlated with the performance of the athlete. An athlete expects his/her trainer to organize entertainment, environmental trips and certain leisure time activities; provide certain sport equipment and to make appropriate choices of his/her roommates in camp and competition days. In addition, selection of training locations that are easy to access and timesaving is effective on the performances of athletes [7].

Athletes take part in competitions under high levels of stress and are significantly affected by competition medium. Depending on the characteristics of the performed sport, an athlete might experience occasional or constant tension and anxiety before, during and after the competition. Competition is an activity where an athlete attempts to show his/her full physical and psychological capacity and to test himself/herself following a long physical and psychological preparation period [8]. Physical fitness (endurance, strength, speed, flexibility, coordination) diet, motivation, selection of athlete and training periods all affect the performance of athletes; psychological and social structure is based on physical structure.

Personal traits, social and psychological needs vary between individuals. During development periods, athletes expect their trainers to be understanding and patient [9]. A comprehensive analysis is required to teach and train skills to provide performance improvement. There is a requirement for systematic analysis to determine the athlete's motor, technical and tactical capabilities, to determine his/her limitations or weaknesses, to identify the causes of failure and to train him/her according to these properties [10]. A trainer should have the capacity to identify the strengths of an athlete and should be able to address the physiological needs of athletes with differing personalities via skillful approach. Patience, determination and conscious approaches might bring a trainer increased achievement [11].

MATERIAL AND METHODS

The trainer evaluation scale for hearing impaired athletes, used in the present study, sought to answer the following question: "What are the expectations of hearing impaired athletes from their trainers" during the first phase of scale preparation. A "Trainer Evaluation Form for Hearing Impaired" was prepared. The literature was

reviewed and expert opinions were consulted to select the questions included in the form. Initially, a total of 79 items were selected, which were then presented for evaluation to 7 experts (trainer, trainer and instructors and measurement and evaluation expert). The number of items was reduced to 28 in line with their suggestions and opinions. The revised form consists of two sections, comprising a personal information section and 28 items on the behaviors of trainers. The form was administered to a total of 221 hearing impaired athletes, 172 (77.8%) of whom were male and 49 (22.2%) of whom were female.

The study group consisted of a total 221 athletes from the following branches and gender: 18 male, 12 female table tennis players; 17 male, 8 female badminton players; 36 male Taekwondo competitors; 15 male wrestlers; 30 male, 13 female football players; 16 male, 16 female volleyball player; 15 male skiers and 25 male judo players. The study included 146 (66.1%) athletes involved in individual sports (wrestling, taekwondo, judo, skiing, badminton) and 75 (33.9%) athletes involved in team sports (football, volleyball). According to expert opinion, lower limit of sampling number collected from a population of 5000-50000 might show 0.05 tolerance [12, 13]. The sample size of 221 represents approximately 8.5% of a population of 2590. Stratified sampling was performed, taking this percentage into account. The participating athletes were provided by the related sports federations and all of the athletes were members of the related sports federations. The distribution of the athletes is presented in Table 1. A total of 12 items, which were statistically agreed by almost all athletes in the trainer evaluation scale for hearing impaired athletes, were included in the scale. A total of 3 sub-dimensions, each containing 4 questions, were formed for these 12 items and the scale was given its final version.

Application Scale and Data Collection: The second phase of the study consisted of studies to develop the trainer evaluation scale for hearing impaired athletes.

Table 1: Number of Athletes and according to Sport Branches

Sport Branch	Population (N)	Sampling	
		n	%
Individual sports	Table Tennis	30	34.5
	Wrestling	15	11.5
	Judo	25	21.2
	Taekwondo	36	17.1
	Badminton	25	19.4
	Skiing	15	17.9
	Football	43	3.9
Team sports	Volleyball	32	4.4
	Total	221	100

Table 2: Exploratory Factor Analysis and Reliability Results for “Trainer Evaluation Scale for Hearing Impaired Athletes” (Cronbach’s Alpha, item-total correlation, test-retest correlation coefficients)

Items	Factor commonvariance	Factor I (Technical)	Factor II (Competition)	FactorIII (Social)	Corrected Item Total Correlations	\bar{x}	Ss
7. He/she administers punishment when I cannot perform the movement.*	.883	-.929			.775	3.25	1.13
4. He/she shows me a new technique many times.	.883	.896			.914	4.43	0.76
9. He/she sets training conditions according to my capacity.	.816	.801			.815	3.42	0.89
5. He/she teaches techniques from difficult to easy.	.678	.714			.683	4.32	0.73
15. He/she blames us when we lose competitions.*	.910		-.851		.867	2.79	0.80
17. I trust to his/her competition knowledge and experience.	.771		.838		.652	4.13	0.51
11. He/she spends more time on the athletes who perform better in competitions.*	.756		-.822		.740	1.89	0.79
13. It is easy to understand and perform the tactics he/she develops in competitions.	.740		.656		.712	4.05	0.87
19. He/she always asks us to compete in a sportsmanlike manner.	.801			.896	.674	3.89	0.50
20. He/she does not divulge any confidential information about me.	.863			.854	.691	3.86	1.28
21. He/she organizes social activities.	.833			.717	.646	3.52	0.80
25. He/she is patient in all activities.	.766			.616	.671	3.64	0.66
KMO =.813							
Bartlett's Test of Sphericity = 2313,240; p =.000							
Eigenvalue =		5.847	2.074	1.579			
Variance explanation ratio (%) = 79.17 (Total)		30.33	25.06	23.77			
Cronbach's Alpha =		.898	.870	.790			
Test-retest =		.845	.821	.884			

* Items that should be reverse scored.

The scale used a 5-point Likert-type scale to determine the agreement/disagreement levels of athletes to evaluate each item in each statement of the scale [14]. The scale responses were “never” (1), “rarely” (2), “sometimes” (3), “very often” (4) and “always” (5). High scores obtained from the scale indicated greater professional knowledge and adherence to social principles by the trainers.

Of the 221 athletes in the study group, 40 (18.1%) were aged 18-20; 47 (21.3%) were aged 21-23; 74 (33.5%) were aged 24-26; 39 (17.6%) were aged 27-29 age group; and 21 (9.5%) were aged 30 and above. In terms of the athletes' educational backgrounds, 31.2% were primary school graduates, 51.6% were secondary school graduates and 17.2% were high school graduates. In terms of professional career duration 9.5% had competed professionally for 1-3 years; 24.4% for 4-6 years; 22.2% for 7-9 years; 18.1% for 10-12 years and 25.8% for 13 years and longer.

Data Analysis: During preparation of the Trainer Evaluation Scale for Hearing Impaired Athletes, the factor structure of the scale was analyzed using exploratory factor analysis. Exploratory factor analysis is a statistical technique to determine factors based on the relationships between the variables [15, 16]. The model can be defined as a structure determined using empirical study data or which was organized based on a certain theory [17].

Prior to the factor analysis, the appropriateness of the data obtained from Hearing Impaired Athletes for factor analysis was examined using Kaiser-Meyer-Olkin and Bartlett tests. To test the reliability of the ‘*Trainer evaluation scale for hearing impaired athletes*’, Cronbach Alpha and test-retest correlation coefficients were calculated using SPSS statistical software (version 17).

Findings and Comments: The Kaiser-Mayer-Olkin measure (KMO) of sampling adequacy was “.813”, exceeding the recommended value of “.60”; and the Bartlett's Test of Sphericity (2313,240, p=.00) was statistically significant, supporting the factorability of the correlation matrix [18]. The criteria considered for the EFA in this study are as follows: (a) The items loaded in each factor are consistent in terms of meaning and scope, (b) The Eigenvalue of each factor is “1.0” at minimum, (c) Each item takes “.40” or more factor loading in the factor within which it occurs, (d) The difference between the factor loadings of an item in the factor within which it occurs and the other factors is “.10” or more.

Next, the 28 items of the ‘*Trainer evaluation scale for hearing impaired athletes*’ were subjected to principal components analysis (PCA). After three items (1, 2, 3, 6, 8, 10, 12, 14, 16, 18, 22, 23, 24, 16, 27, 28) not meeting the criteria above were discarded, the analysis was

repeated, which yielded a three-factor structure with Eigenvalues all exceeding "1.0". Factor loadings, Eigenvalues, percentage of cumulative variance explained, Cronbach Alpha coefficients and item-total correlation coefficients for the remaining 12 items are shown in Table 2.

As seen in Table 2, the factor loadings of the items range between ".616" and ".929". Items 7, 11 and 15 include negative statements and the scoring weighing is reversed. An analysis of the content of the items in each factor revealed that the 1st factor (items 4, 5, 7, 9) is about evaluating the trainer in technical terms, the 2nd factor (items 11, 13, 15, 17) is about evaluating the trainer's competition knowledge and skills and the 3rd factor (items 19, 20, 21, 25) is about evaluating the trainer in terms of social relations with the athletes. Thus the factors are termed "Technical skills", "Competition knowledge and skills" and "Social skills". It was found that this three-factor solution explained a total of 79.17 percent of the total variance [1st factor (Technical Skills)= 30.33%; 2nd factor (Competition knowledge and skills) = 25.06%; 3rd factor (Social skills) = 23.77%]. Kline argues that, for a scale to explain more than 40% of the total variance, is a significant indicator in favor of construct validity [15]. Based on this finding, it can be stated that the results of the exploratory factor analysis strongly support the construct validity of the 'Trainer evaluation scale for hearing impaired athletes'.

The internal consistency coefficient and test-retest reliability coefficient were estimated to determine the reliability of the scale.

The estimated internal consistency coefficients were .898 for the 1st factor (Technical Skills), .870 for the 2nd factor (Competition knowledge and skills) and .790 for the 3rd factor (Social skills). These Cronbach Alpha coefficient values suggest that the 'Trainer evaluation scale for hearing impaired athletes' scale is a reliable instrument.

The test-retest reliability of the 'Trainer evaluation scale for hearing impaired athletes' scale was conducted using the data gathered from 221 participants at a two-week interval. The test-retest scores revealed a correlation coefficient of .845 for the 1st factor (Technical Skills), .821 for the 2nd factor (Competition knowledge and skills) and .884 for the 3rd factor (Social skills), indicating that the instrument is reliable over time. The participants included national team athletes who were invited to preseason training of the Turkey National Team for Hearing Impaired Athletes during the period September-December 2011.

As a result of validity and reliability studies the 'Trainer evaluation scale for hearing impaired athletes' was found to consist of a total of 12 items that can be used to evaluate trainers' technical skills, competition knowledge and skills and social skills based on the views of hearing impaired athletes. The format of 'Trainer evaluation scale for hearing impaired athletes' used a 5-point Likert scale, ranging from "always" to "never". The minimum and maximum possible scores from each sub-scale are 4 and 20, respectively. Higher scores from the each sub-scale indicate that the trainer's skills or knowledge in the relevant subscale is good, while lower scores indicate poor skills or knowledge. Trainers can also be evaluated in general using the total score from all sub-scales.

DISCUSSION

The Trainer Evaluation Scale for Hearing Impaired Athletes was prepared to provide a tool with a high validity and reliability level to measure hearing impaired athletes' evaluations of their trainers. The scale consisted of 12 items with 3 factors. It was found that factor load values of the 4 items in the first factor varied between -.929 and .896; factor load values of the 4 items in the second factor varied between -.851 and .838; and factor load values of the 4 items in the third factor varied between .616 and .896. Kline reported that factor load values of .60 and above were high, while factor load values of .30-.59 were moderate [15]. Tabachnick and Fidell considered a load value of .45 and above as a good criterion. The factor load values of all 12 items in this scale were found to be .616 and above in the present study [16].

In conclusion, data analysis indicated that the trainer evaluation scale for hearing impaired athletes, which consisted of 12 items, had a three-factor (technical, competition and social) structure and was provided valid and reliable evaluation of trainers by hearing impaired athletes. Trainers, who are role models for athletes, have an important role in displaying sportsman like conduct. In addition, evaluation of trainers by hearing-impaired athletes is of great importance in terms of illustrating the trainer-athlete relationships and determining appropriate behavior styles.

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