

Reliability of Health Assessment Questionnaire for Female Sportspersons involved in Team Sports

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ABSTRACT

Sports have an immense impact on a person's daily life and health. Getting indulged in physical activities like sports improves your heart function, reduces the risks of diabetes, controls blood sugar and lowers tension and stress level. The objective of the study was to evaluate the test-retest reliability of the Health Assessment Questionnaire (HQ) for females involved in team sports. A group 35 females involved in team games/sports, aged 17 to 20 years participated as the subject of the study. A questionnaire with selected 42 attributes/elements representing health status was developed and sent to the expert of the field. Mean and standard deviation of the responses of the subject were calculated for descriptive statistical analysis. Pearson's coefficient of correlation was used to measure the test-retest reliability of the health questionnaire. All statistical test was applied $p < 0.05$ level of significance. The range of 'r' for the administered questionnaire was .40 to .70 which is considered an "acceptable" measure of reliability. In conclusion each item/variable of the selected questionnaire had acceptable reliability in regard to females involved in team sports.

KEYWORDS

team games; health assessment; questionnaire; female sportsperson; reliability; validity

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INTRODUCTION

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity [1]. Sports have an immense impact on a person's daily life and health; they not only provide us an interesting routine but also a healthy body [2]. Getting indulged in physical activities such as sports whether individual or team sports, brings positive energy, discipline, and other life changing qualities which in turn reduces health related problem. Playing sports strengthens body and also improves the muscle memory and muscle coordination. According to World Health Organization 2018, physical activity (PA) promotion is a global public health priority. Sport participation was identified by the International Society for Physical Activity and Health as "an investment that works" to promote physical activity [3].

Many sports activities including team sports, individual sports, and independent physical activity offer health benefits associated with exercise [4]. Team sports participation, however, is different from participation in individual or independent sports activities because the team environment encourages increased involvement with peers in a social context [4, 5].

Team sports in particular are thought to lead to improved mental health because of their social nature and resulting social support [6]. Several studies have also revealed other holistic benefits of participating in team sports [7, 8].

A health assessment questionnaire for females involved in team games is of immense importance. In the process of development of HQ, testing the reliability is an important scientific consideration. Therefore, the present study aimed to determine reliability of health assessment questionnaire for female sportspersons involved in team sports.

METHODS

35 college going females involved in team game (hockey, football, volleyball, basketball, cricket, handball), aged between 17 to 20 years, were randomly selected as subjects for the study. A standardized health assessment questionnaire (HQ) was administered to the participants to determine the test-retest reliability for team game females. A questionnaire with selected 42 items representing health status was developed and sent to the expert of the field. The original questionnaire was then modified, keeping in mind the suggestions provided by the experts. This was done so as to ascertain the face validity of the questionnaire. The HQ prompts the respondents, through a series of questions on the health status, which they had to answer on a nine-point scale.

The health questionnaire was developed considering seven components namely

- (1) Sleep and rest
- (2) Diet and nutrition
- (3) Work and study
- (4) Health and Hygiene
- (5) Infections, diseases and different biological cycles related to females
- (6) Sports and recreation
- (7) Cultural and social

These components were derived with the help of 42 questions and six questions were included for each component. Only 39 questions were included as last 3 questions were related to certain diseases, sickness and infections. The corresponding variables and their codes have been summarized in appendix-1.

STATISTICAL ANALYSIS

Mean and standard deviation of the responses of the subject were calculated for descriptive statistical analysis. Pearson's coefficient of correlation was used to measure the test-retest reliability of the HQ. In addition, student's t-test was also employed to support the correlation. The level of significance was set at $p < 0.05$.

RESULTS AND DISCUSSION

TABLE 1: Statistics of Trial One and Trial Two of Health Assessment Questionnaire (HQ) for Test-Retest Reliability for Team Games Group

S. No.	Variables	Trial one			Trial two			Test- retest coefficient
		M	±	SD	M	±	SD	'r'
1.	HQ1	6.37	±	1.57	6.60	±	1.93	.41
2.	HQ2	6.00	±	2.41	6.03	±	2.12	.70
3.	HQ3	2.29	±	1.62	3.14	±	1.72	.48
4.	HQ4	5.26	±	1.31	6.29	±	1.15	.46
5.	HQ5	5.20	±	1.64	5.97	±	1.72	.40
6.	HQ6	4.34	±	2.36	4.74	±	2.03	.69
7.	HQ7	6.11	±	1.57	6.60	±	1.80	.41
8.	HQ8	5.20	±	1.75	5.74	±	1.42	.47
9.	HQ9	4.29	±	1.69	5.63	±	1.65	.49
10.	HQ10	4.91	±	1.79	6.11	±	1.60	.68
11.	HQ11	7.66	±	1.06	7.74	±	1.38	.46
12.	HQ12	7.80	±	1.21	8.00	±	1.11	.42
13.	HQ13	6.20	±	2.00	6.40	±	1.79	.48
14.	HQ14	6.77	±	1.59	7.06	±	1.43	.41
15.	HQ15	1.14	±	0.49	1.34	±	0.80	.47
16.	HQ16	1.23	±	0.77	1.40	±	0.65	.47
17.	HQ17	6.23	±	1.03	6.83	±	1.44	.46
18.	HQ18	2.09	±	1.79	2.49	±	1.70	.41
19.	HQ19	6.94	±	1.14	6.66	±	2.04	.46
20.	HQ20	7.49	±	1.48	7.20	±	1.39	.45
21.	HQ21	3.06	±	2.22	2.86	±	1.70	.40
22.	HQ22	6.34	±	1.78	6.66	±	1.63	.49
23.	HQ23	7.09	±	1.72	7.54	±	1.50	.43
24.	HQ24	7.09	±	1.34	7.20	±	1.51	.41
25.	HQ25	7.26	±	2.03	7.17	±	1.77	.42
26.	HQ26	7.14	±	1.29	7.69	±	1.64	.45
27.	HQ27	3.46	±	2.19	3.74	±	1.42	.50
28.	HQ28	6.17	±	1.42	7.11	±	1.55	.54
29.	HQ29	4.89	±	1.68	5.63	±	1.77	.42
30.	HQ30	6.63	±	1.57	7.57	±	1.48	.43
31.	HQ31	2.37	±	2.20	2.23	±	1.33	.41
32.	HQ32	6.80	±	2.04	7.20	±	1.28	.44
33.	HQ33	2.91	±	2.09	2.74	±	1.95	.54
34.	HQ34	7.94	±	1.09	7.53	±	1.14	.48
35.	HQ35	1.87	±	1.18	1.83	±	1.12	.68
36.	HQ36	3.46	±	0.89	3.57	±	0.88	.43
37.	HQ37	1.83	±	2.02	1.57	±	1.97	.59
38.	HQ38	1.03	±	1.02	2.24	±	1.69	.49
39.	HQ39	3.83	±	2.27	3.61	±	1.53	.61

The variables namely HQ40, HQ 41 and HQ 42 related to certain diseases, infections and sickness respectively, did not demand inter- test comparisons but inter group comparisons and inferences. Hence, they were not subjected to inter-test reliability. The analysis of data in table above reveals that the test-retest reliability for co-efficient of Health Assessment Questionnaire (HQ) administered to the female sportsperson belonging to team games/sports ranges from .40 to .70 i.e. average to good. The means and standard deviation of trail one and trails two demonstrate compatibility for each team health question.

TABLE 2: Inferential Statistics of Health Assessment Questionnaire (HQ) Administered to Females Involved in Team Games

S. No.	Variables	Trial one			Trial two			Test-retest coefficient	T-values
		M	±	SD	M	±	SD	'r'	
1.	HQ1	6.37	±	1.57	6.60	±	1.93	.41	0.55*
2.	HQ2	6.00	±	2.41	6.03	±	2.12	.70	0.05*
3.	HQ3	2.29	±	1.62	3.14	±	1.72	.48	2.13
4.	HQ4	5.26	±	1.31	6.29	±	1.15	.46	3.5
5.	HQ5	5.20	±	1.64	5.97	±	1.72	.40	1.92*
6.	HQ6	4.34	±	2.36	4.74	±	2.03	.69	0.76*
7.	HQ7	6.11	±	1.57	6.60	±	1.80	.41	1.21*
8.	HQ8	5.20	±	1.75	5.74	±	1.42	.47	1.41*
9.	HQ9	4.29	±	1.69	5.63	±	1.65	.49	3.36
10.	HQ10	4.91	±	1.79	6.11	±	1.60	.68	2.96
11.	HQ11	7.66	±	1.06	7.74	±	1.38	.46	0.27*
12.	HQ12	7.80	±	1.21	8.00	±	1.11	.42	0.72*
13.	HQ13	6.20	±	2.00	6.40	±	1.79	.48	0.44*
14.	HQ14	6.77	±	1.59	7.06	±	1.43	.41	0.8*
15.	HQ15	1.14	±	0.49	1.34	±	0.80	.47	1.26*
16.	HQ16	1.23	±	0.77	1.40	±	0.65	.47	0.99*
17.	HQ17	6.23	±	1.03	6.83	±	1.44	.46	2
18.	HQ18	2.09	±	1.79	2.49	±	1.70	.41	0.96*
19.	HQ19	6.94	±	1.14	6.66	±	2.04	.46	0.7*
20.	HQ20	7.49	±	1.48	7.20	±	1.39	.45	0.84*
21.	HQ21	3.06	±	2.22	2.86	±	1.70	.40	0.42*
22.	HQ22	6.34	±	1.78	6.66	±	1.63	.49	0.78*
23.	HQ23	7.09	±	1.72	7.54	±	1.50	.43	1.16*
24.	HQ24	7.09	±	1.34	7.20	±	1.51	.41	0.32*
25.	HQ25	7.26	±	2.03	7.17	±	1.77	.42	0.19*
26.	HQ26	7.14	±	1.29	7.69	±	1.64	.45	1.56*
27.	HQ27	3.46	±	2.19	3.74	±	1.42	.50	0.63*
28.	HQ28	6.17	±	1.42	7.11	±	1.55	.54	2.64
29.	HQ29	4.89	±	1.68	5.63	±	1.77	.42	1.8*
30.	HQ30	6.63	±	1.57	7.57	±	1.48	.43	2.58
31.	HQ31	2.37	±	2.20	2.23	±	1.33	.41	0.32*
32.	HQ32	6.80	±	2.04	7.20	±	1.28	.44	0.98*
33.	HQ33	2.91	±	2.09	2.74	±	1.95	.54	0.35*
34.	HQ34	7.94	±	1.09	7.53	±	1.14	.48	1.53*
35.	HQ35	1.87	±	1.18	1.83	±	1.12	.68	0.14*
36.	HQ36	3.46	±	0.89	3.57	±	0.88	.43	0.51*
37.	HQ37	1.83	±	2.02	1.57	±	1.97	.59	0.54*
38.	HQ38	1.03	±	1.02	2.24	±	1.69	.49	3.62
39.	HQ39	3.83	±	2.27	3.61	±	1.53	.61	0.47*

*Insignificant, ($p < 0.05$, $T > 1.99$)

The analysis of data in the table above reveals that the variables in the Health Assessment Questionnaire (HQ) namely were HQ1, HQ2, HQ5, HQ6, HQ7, HQ8, HQ11, HQ12, HQ13, HQ14, HQ15, HQ16, HQ18, HQ19, HQ20, HQ21, HQ22, HQ23, HQ24, HQ25, HQ26, HQ27, HQ29, HQ31, HQ32, HQ33, HQ34, HQ35, HQ36, HQ37, HQ39 were found to be insignificant ($p < 0.05$, $T > 1.99$). Whereas, the variables namely HQ3, HQ4, HQ9, HQ10, HQ17, HQ28, HQ30, HQ38 were significant ($p < 0.05$, $T > 1.99$).

CONCLUSIONS

- The face validity of the Health Assessment Questionnaire (HQ) was ascertained with proper inputs from the experts, who rated each item on the HQ on ten-point scale.
- The variables namely HQ40, HQ 41 and HQ 42 related to certain diseases, infections and sickness respectively, did not demand inter- test comparisons but inter group comparisons and inferences. Hence, they were not subjected to inter-test reliability.
- The test-retest reliability for co-efficient of Health Assessment Questionnaire (HQ) administered to the girls belonging to team games ranges from .40 to .70
- The t-test showed that out of 39 variables, 31 variables were insignificant and 7 variables were significant, supporting the claim of reliability of the HQ.

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APPENDICES

Appendix-1

Health Variables (Through Questionnaire) and their Coding		
S. No.	Variables	Variables Code
1	Satisfaction with sleep and rest	HQ1
2	Sound sleep	HQ2
3	Disturbance in sleep with vague fear/anxiety/and/or bad dreams	HQ3
4	Intake of sufficient nutrition diet	HQ4
5	Concerned about diet	HQ5
6	Weight/diet control	HQ6
7	Regular/moderate hard physical work	HQ7
8	Regular moderate exercise	HQ8
9	Improvement upon study	HQ9
10	Improvement in health	HQ10
11	Personal hygiene	HQ11
12	Cutting and cleaning nails regularly	HQ12
13	Caring for proper ventilation, study light, correct postures, regular medical check-up etc.	HQ13
14.	Regular bowel movements (Internal cleanliness)	HQ14
15.	Indulging in smoking	HQ15
16.	Indulging in alcoholism	HQ16
17.	Concentration on work	HQ17
18.	Consuming eatables exposed to dust and flies (Food eating habits)	HQ18
19.	Avoiding mental stress and trying to remain cheerful	HQ19
20.	Mixing up with people and sharing feelings (Socialization)	HQ20
21.	Prone to infections/diseases	HQ21
22.	Regular biological cycles (Menstrual cycles)	HQ22
23.	Enjoying sports and recreation	HQ23
24.	Participation in recreational activities and sports	HQ24
25.	Considering sports as a good past time	HQ25
26.	Outings with collegemates and friends	HQ26
27.	Non participation in religious functions	HQ27
28.	Participation in social functions	HQ28
29.	Participation in cultural programs	HQ29
30.	Worshipping in temple, gurudwara, mosque, church etc	HQ30
31.	Treatment from quack	HQ31
32.	Treatment from family doctor	HQ32
33.	No treatment during sickness	HQ33
34.	No. of hours of sleep	HQ34
35.	No. of hours of rest in day time	HQ35
36.	No. of meals per day	HQ36
37.	No. of fasts/skipping meals per week	HQ37
38.	No. of hours devoted for study	HQ38
39.	No. of hours of moderate work	HQ39

Appendix-2
SELF APPRAISAL OF HEALTH

A. PLEASE ENCIRCLE THE APPROPRIATE NUMBER

1. I am presently satisfied with my sleep and rest.
- | | | | | | | | | |
|------------|---|---|---|---|---|---|---|------|
| Not at all | | | | | | | | Most |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
2. I get sound sleep.
3. Vague fear and/or anxiety/bad dream often disturbs my sleep.
4. I take sufficient nutritional (balanced) diet.
5. I am particular about my diet.
6. I'd weight/diet control.
7. I do regular/moderate (reasonable) hard physical work (At least 30 minutes/day) .
8. Regular moderate exercises/ work stimulates my appetite.
9. Presently I am improving on upon my study.
10. My health is improving.
11. I take care of personal hygiene (such as brushing the teeth, washing the hands and mouth before/after food, regular bath, wearing clean clothes etc.
12. I cut my nails regularly and keep them clean.
13. I do care for proper ventilation, study light, correct postures, regular medical check-up etc.
14. I have regular bowel movements.
15. I indulge myself in smoking.
16. I indulge myself in alcoholism.
17. I can concentrate on my work very well.
18. I do consume eatables exposed to dust and flies.
19. I try to avoid mental stress of any type and try to remain cheerful.
20. I like to mix-up with people and share their feelings.
21. I am prone to infectious/diseases.
22. My biological cycles (Menstrual cycles) are regular.
23. I enjoy sports and recreation.
24. I do participate regularly in different recreational activities and sports.
25. I consider sports as a good pastime.
26. I go on outings with my collegemates/friends.
27. I do not participate in religious functions such as Holi, Durgapuja, Diwali, Mahavir Jayanti, Christmas Day etc.
28. I participate in social functions.
29. I participate in cultural programmes held in my college.
30. I go to temple/gurudwara/mosque/church etc. for worship.
31. In the event of sickness, I prefer to take treatment from any quack.
32. In the event of sickness, I prefer to take treatment from my family doctor only.
33. In the event of sickness, I prefer not to take any treatment.

B. ANSWER THE FOLLOWING:

34. How many hours do you sleep daily on an average?
35. How many hours do you spend for rest in day times?
36. How many times do you take meal per day on an average? (meal include breakfast, lunch, evening snacks, dinner etc.)
37. How many meals you skip or fast per week on an average?
38. How many hours do you spend for study apart from studying in classroom?
39. How many hours do you moderate work? (walking, singing, dancing, travelling, marketing, driving, etc.)
40. Have you suffered any of the following recently? (please encircle).
 - a) Diphtheria
 - b) Cholera
 - c) Typhoid
 - d) Malaria
 - e) Jaundice
 - f) Any other

41. Are you prone to:-
 - a) Frequent cough and cold
 - b) Frequent fever
 - c) Diarrhea/constipation

42. Do you suffer from any of the menstrual problems given below:
 - a) Pain or cramps during menses
 - b) Profuse bleeding during menses
 - c) Menses lasting more than seven days
 - d) Irregular menses
 - e) Intermenstrual bleeding i.e. bleeding between the menstrual periods
 - f) White discharge (leucorrhoea) in excess
 - g) Blood stained leucorrhoea
 - h) Backache during menses
 - i) Any other problem
 - j) No problem!

(Signature of the student)