

# Quality of Life of Taekwondo Players: An Assessment Using WHOQOL-BREF

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## Abstract

The present study aimed to assess male and female Taekwondo (TKD) players based on four domains of World Health Organization Quality of Life (WHOQOL) -BREF and to find the dominant domain in TKD players' life. Forty-six (46) male and fifty-five (55) female participants were included in the study through purposive random sampling. The information on four quality of life domains, i.e., physical health, psychological, social relationship, and environment, were gathered through the WHOQOL-BREF Bengali version (WHO, 2020) questionnaire. The researchers analysed the data through descriptive analysis, ANOVA, LSD, and students' t-tests at 0.05 level of significance. The analysis revealed that irrespective of Gender, the social relation domain plays a dominant role in TKD players' life, and the male TKD players are better than their female counterparts in the physical health domain only. Based on the result, we concluded that regular practice and participation in the TKD program help the participant to develop all four aspects of WHOQOL-BREF. Among the four domains, the participants scored significantly better in the social relation domain in both gender groups. The interpersonal relations and interaction among the players during a practice session and competition may be the possible reason behind such kind of result. In the inter-group comparison, the male participants responded significantly better in the physical health domain than the female participants, possibly because of some physical and physiological gender differences.

**Keywords:** Taekwondo, WHOQOL-BREF, Domains, Social relation, Physical health.

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## GENERAL INTRODUCTION

Taekwondo (TKD), an official Olympic sport, is a kind of martial arts formed to train the body and mind approximately five thousand (5000) years ago during the Shilla period in Korea to produce the country's leaders (USATKD, 2022). Performing different kinds of movement poses by synchronizing peaceful mind and body are the unique features of TKD, which brings harmony to life and society (USATKD, 2022). These unique activities and characteristics of TKD ensure an individual's balanced growth and development and ultimately make TKD a way of Life (USATKD, 2022).

Unlike other martial arts practicing and participating in TKD provides physical, physiological, psychological, and life skill benefits as it develops strength, stamina, flexibility, coordination,

concentration, goal setting, decision making, self-defense, self-esteem, respect, discipline, etc. (Nair, 2020). Furthermore, it is also beneficial for developing a healthy community (Burke *et al.*, 2007). So it can be said that TKD develops the individual cognitively, physically, emotionally, and socially (Lakes *et al.*, 2013).

There are arguments about which particular population should participate in TKD as it is considered a 'hard' martial art (Burke *et al.*, 2007). As 'hard' martial arts, the health benefits of TKD for elderly people have been documented (Origua *et al.*, 2018). At the same time, various research results have also proved that TKD provides multidimensional benefits to juniors (Buschbacher & Shay, 1999) and the adolescent population (Tadesse, 2016). Lakes *et al.*, (2013) cited various shreds of evidence that prove the fact that the

martial arts, especially TKD, are beneficial for children as well as for adolescents for physical (Kim *et al.*, 2011), motor (Fong, Tsang & Ng, 2012), and cognitive and behavioral (Lakes & Hoyt, 2004) development.

Tadesse (2016), in a review report, mentioned about positive effects of TKD/martial arts training on physical and psychosocial aspects. Furthermore, he has also reported a few adverse effects of TKD/martial arts training, like injury-related problems, health-related problems, psychosocial problems, and unhealthy weight management of athletes. He has concluded that TKD has a multifaceted positive effect on wellbeing.

The quality of life, i.e., the state of physical, mental, and social wellbeing, level of illness, level of physical exercises and activities, lifestyle, environmental and family background, economic status, level of competition, etc., stresses any individual's health status (Kotarska *et al.*, 2019). WHOQOL-BREF includes four domains, including physical health, psychological, social relationships, and environment, to assess the quality of life of an individual (World Health Organization, 1996).

Various studies have reported a positive relation between practicing combat sports and martial arts with quality of Life (Kotarska *et al.*, 2019), especially regarding physical health (Mendonça *et al.*, 2017) and psychological domain (Schwartz *et al.*, 2021). The researches on assessing the quality of Life of TKD players in all four domains are unavailable. With this understanding, the present researchers have

conducted this assessment study on the quality of Life of TKD players.

**Purposes:** The present study has the following purposes:

- To assess the quality of Life of TKD players based on four domains of WHOQOL-BREF, i.e., physical health, psychological, social relationship, and environmental.
- To find out the dominant domain of WHOQOL-BREF in TKD players' life.
- Furthermore, to find out the difference between male and female TKD players based on four domains of WHOQOL-BREF.

## MATERIALS & METHODS

### Participants

Since the target population was the TKD player, a purposive random sampling technique was adopted. For the study total of one hundred one (101) adolescent TKD players aged 12 to 18 years residing at Bolpur Sub-division, Birbhum, West Bengal, India, who have participated in Intra district Taekwondo championships of Birbhum District, West Bengal, India, during the last four (04) years and are still practicing TKD, have been selected. Out of the total subjects as per the feasibility and those who met all the inclusion criteria (See Table 1 and Fig. 1) total of forty-six (46) male and fifty-five (55) female participants have been included in the study (See Table 2).

**Table 1: Inclusion and exclusion criteria of the participation**

<b>Inclusion criteria</b>	
•	TKD players from Bolpur Sub-division, Birbhum, West Bengal, India.
•	Age between 12 to 18 years.
•	Level of Competition: Intra district Taekwondo championships of Birbhum District, West Bengal, India
•	Duration: Last four (04) years (2018-2021).
•	Still practicing TKD.
<b>Exclusion criteria</b>	
•	TKD players not from Bolpur Sub-division, Birbhum, West Bengal, India.
•	Players age $\leq 12$ years or $\geq 18$ years.
•	Players who have participated in Taekwondo Championship before 2018.
•	Players who have not participated in Intra District Taekwondo Championship before 2018.
•	Players who are not practising TKD presently.

**Table 2: Players from different Gender**

Gender	N
Male	46
Female	55
<b>Total</b>	<b>101</b>

### Instrumentation & Study Design

To assess the quality of Life of TKD players WHOQOL-BREF Bengali version (WHO, 2020) questionnaire has been used. The participants have a

brief idea about the study's purpose before filling out the questionnaire. The questionnaire consists of 26 questions that ask about different facets of life, based on four domains of life i.e. physical health, psychological,

social relationship, and environment (see Appendix). We recorded the responses according to The WHOQOL-BREF manual scaling system (World Health Organization, 1996). The first two general questions ask about the respondents' overall perception of quality of life and perception of their health. Other questions were about the different facets of life (see Appendix). We summed up the raw score according to the instructions in the WHOQOL- BREF manual and converted it into a standard score using the WHOQOL-100 (World Health Organization, 1996).

### Statistical Tools

Descriptive analysis for all four domains of quality of life has been done separately for male and female TKD players. To find out the difference among all four domains, ANOVA was calculated separately for both genders at 0.05 level of significance. To find out the best domain for both genders Least Significance Difference (LSD) test has been applied. To find out the gender differences for all the four domains student' t-test has been applied. The graphical representation shows the differences between all four domains and genders.

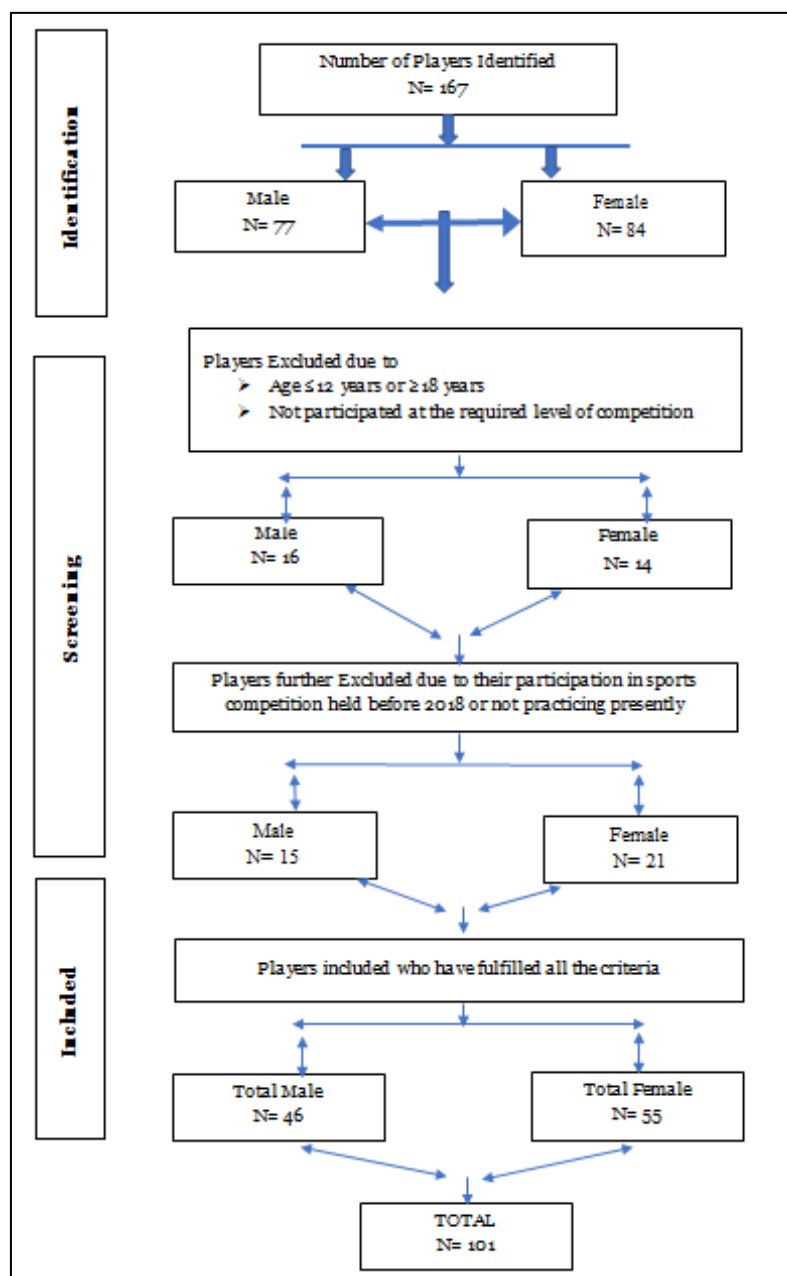


Figure 1: Flow chart of Inclusion and Exclusion Criteria of the Participants

## RESULT

According to the responses of TKD players, we analyzed all four subdomains of WHOQOL-BREF,

i.e., physical health, psychological well-being, social relationships, and environmental well-being. We converted the raw score into the standard score of 0-100

as per the score table of the WHOQOL-BREF manual. Summarizing the scores from each of the four domains yields the overall quality of life score. To determine the differences in genders, we analyzed the data using descriptive statistics, ANOVA, LSD, and student t-tests.

Among the male, the mean score of the social relationship domain was highest with mean and SD scores of 80.48±13.81, followed by physical health, psychological, and environment domain, respectively, for male TKD players. The response score range was for physical health domain 32, psychological domain 56, social relationship domain 50, and environment domain 44, respectively.

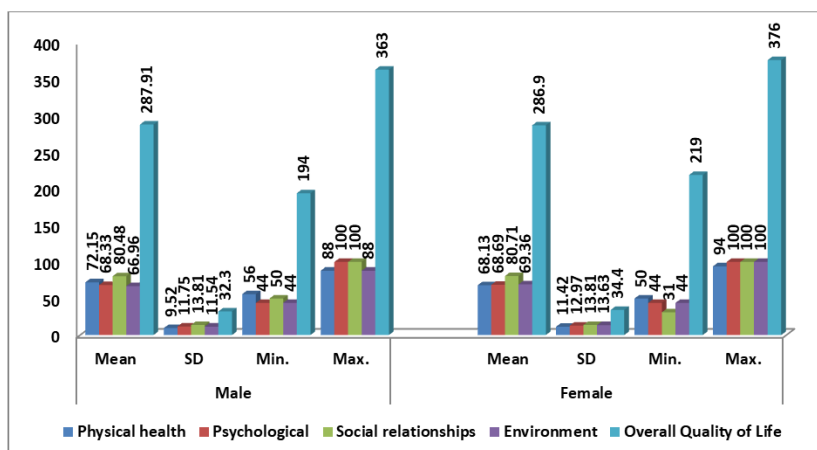
Among the females, the mean score of the social relationship domain was highest, with mean and

SD scores of 80.71±13.81, followed by psychological, environmental, and physical health domains, respectively. The response score range for the physical health domain was 44, psychological domain 56, social relationship domain 69, and environment domain 56, respectively.

As far as the mean scores are concerned, the males are slightly better than the females in physical health. In contrast, females are better in psychological, social relationship, and environmental domains. With a mean score of 169 for males and 157 for females, overall quality of life scores for males was better than for females. For detailed descriptive analysis, see Table 4 and Figure 2.

**Table 4: Descriptive Analysis of All the Four Domains of WHOQOL & Overall Quality of Life**

Domains	Male				Female			
	Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
Physical health	72.15	9.52	56	88	68.13	11.42	50	94
Psychological	68.33	11.75	44	100	68.69	12.97	44	100
Social relationships	80.48	13.81	50	100	80.71	13.81	31	100
Environment	66.96	11.54	44	88	69.36	13.63	44	100
Overall Quality of Life	287.91	32.30	194	363	286.90	34.40	219	376



**Figure 2: Descriptive Analysis of All the Four Domains of WHOQOL & Overall Quality of Life**

For both genders, there were minor differences among the four domains of WHOQOL. However, the ANOVA indicates significant differences among all

four domains, as the calculated 'F' values for both genders (see Table 5 & 6) were higher than the tabulated 'F' values, which were 8.53 for both genders.

**Table 5: Analysis of Variance among the Four Domains of WHOQOL of Male Taekwondo Players**

Source of Variance	Df	SS	MSS	F
Between Group	4-1=3	5098.478	1699.49	12.30*
Within Group	184-4=180	24855.435	138.08	

\*Significant at .05 levels. Tab. F .05 (df = 3,180) = 8.53

**Table 6: Analysis of Variance among the Four Domains of WHOQOL of Female Taekwondo Players**

Source of Variance	Df	SS	MSS	F
Between Group	4-1=3	5964.15	1988.05	11.77*
Within Group	220-4=216	36463.94	168.81	

\*Significant at .05 levels. Tab. F .05 (df = 3,180) = 8.53

Pairwise Mean Comparison through List Significance Difference Test (LSD) at 0.05 level of significance revealed the dominant domain of WHOQOL in TKD players' life. The calculated criterion value at 0.05 level of significance was 5.88, and for the female, it was 5.94.

The analysis shows that the social relations domain was significantly superior than other three domains for both the genders as the mean difference values were higher than the critical difference values. No significant differences were there among other domains for both the genders (See Table 7 & 8).

**Table 7: Pair Wise Mean Comparison among Four Domains of WHOQOL of Male Taekwondo Players**

D-1	D-2	D-3	D-4	MD	CD at 0.5 level
72.15	68.32			3.83	5.88
72.15		80.47		8.32*	
72.15			66.95	5.22	
	68.32	80.47		12.15*	
	68.32		66.95	1.37	
		80.47	66.95	13.52*	

D1 = Physical Health, D2 = Psychological, D3 = Social relationships, D4 = Environment  
\*Significant at .05 Level.

**Table 8: Pair Wise Mean Comparison among Four Domains of WHOQOL of Female Taekwondo Players**

D-1	D-2	D-3	D-4	MD	CD at 0.5 level
68.12	68.69			0.57	5.94
68.12		80.70		12.58*	
68.12			69.36	1.24	
	68.69	80.70		12.01*	
	68.69		69.36	0.67	
		80.70	69.36	11.34*	

D1 = Physical Health, D2 = Psychological, D3 = Social relationships, D4 = Environment  
\*Significant at .05 Level.

Student's 't' test was applied to find out the difference between genders in each particular domain of WHOQOL and overall quality of life. Based on the calculated 't' value (1.90), we found that among the WHOQOL domains, only in physical health, the

genders are significantly different at 0.05 level (see table 9), so the male are better than the girls in this domain. No significant differences were there between the genders in the other three domains and overall quality of life (see table 9).

**Table 9: Results of t-Test of Four Domains of WHOQOL between Male & Female Taekwondo Players**

Domain	Male		Female		MD	df	Cal 't'	Tab 't'
	N	Mean	N	Mean				
Physical health	46	72.15	55	68.13	4.02	99	1.90*	1.66
Psychological		68.33		68.69	0.36		0.15	
Social relationships		80.48		80.71	0.23		0.08	
Environment		66.96		69.36	2.40		0.96	
Overall Quality of Life		287.91		286.90	1.02		0.15	

\* Significant at .05 levels

## DISCUSSION

We wanted to find out the differences in quality of life of male and female TKD players based on four domains of WHOQOL-BREF i.e. physical health, psychological, social relationship and environment and also to find out the dominant domain for both the genders.

ANOVA (See Table 5 & 6) revealed significant differences among the four domains for both the genders. Pairwise mean comparison (See Table 7 & 8) revealed that the social relationship domain is the superior domain in both the gender groups than other domains.

As far as the mean scores of the other three domains are concerned, no significant differences existed among males as well in the female. Among those three domains in the male group, the mean score value of physical health was highest, followed by psychological and environment domain; in the female group environment domain found to be best followed by psychological and physical health. Based on the comparison done between the groups (See Table 9) on all the four domains and overall quality of life separately, physical health domain of the male group was significantly better than the girls. The present researchers would like to attribute a few reasons behind such results.

TKD as a group activity learning of various skills of TKD takes place within the partners (Park *et al.*, 2013), so the interaction between the players takes place among the partners within the group. Due to this the players develops various social skills like self-esteem, self-confidence (Najafabadi *et al.*, 2018), courtesy, integrity, perseverance, self-control and indomitable spirit (Ivester, 2019), social norms, values, (Lim and Kim, 2011) etc. as well as the moral qualities (Park *et al.*, 2013). May be why, irrespective of gender, the social relationship domain plays a dominant role in the TKD players life. TKD as a part of marital arts (Lewis, 1996) also have physical (Fong, Fu, & Ng, 2012) and psychological benefits (Goldsmith, 2013) as well as helps in the development of living environment (White, 2008). May be why the TKD players in this study have similar responses in physical health, psychological, and environment domains, so there was no significant difference among these three domains for both genders. The result of the present study is in line with the result of few previous studies conducted by Calinog *et al.*, (2021). They concluded that TKD promotes social as well as physical qualities of the players so can also be a part of leisure time activity. Tadesse (2016) explained the multiple benefits of TKD like physical, social and mental benefits.

The TKD players' life comprised of various physical and physiological characteristics, such as lower percentage of fat, 'ectomorphic-mesomorph' body type, moderate level of cardio-respiratory fitness, high anaerobic power of lower limbs, moderate to high dynamic strength and endurance of both upper and lower limbs as well as high degree of flexibility of the lower limbs. The male TKD players are significantly better than female (Arazi, Hosseinzadeh, & Izadi, 2016) in such characteristics, may be why the male TKD players participated in the present study are better in the physical health domain of WHOQOL than the female TKD players.

From the above facts, it is clear that TKD as a group activity helps the participants to interact with their co- participants, which helps them to develop various social qualities. Beside this the involvement of various attacking and defending skills develops various physical, psychological and environmental life skills. In the present study, the TKD players of both the genders may have developed more social qualities than other domains of life, due to which only the social relationship domain was significantly superior to other three domains. Participating and practicing taekwondo regularly may have affected equally on the development of other three domains of WHOQOL of the participants, which may be why physical, psychological and environment domains in both groups do not differ from each other.

It is also clear that the participants of the present study, irrespective of gender, have equal effect of participating and regular practice of TKD program.

So no gender differences were found for the WHOQOL domains, namely psychological, social relationship, environment, and overall quality of life. Due to some physical and physiological differences between the genders, the male TKD players found to be significantly better in the physical health domain than the female TKD players.

## CONCLUSION

Practice and participation in TKD program developed all the four domains of WHOQOL-BREF of the participant in both the genders. Among the four domains the participants of the present study have significantly scored better in social relation domain in both the gender group may be due to inter personal relation and interaction among the players during practice session as well as during the competition. In the inter-group comparison, male participants were significantly better in the physical health domain than female participants, possibly because of some physical and physiological gender differences.

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The author(s) declared no potential conflicts of interest concerning this article's research, authorship, and/or publication.

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## DATA AVAILABILITY STATEMENT

The data supporting this study's findings will be available from the corresponding author [Ashoke Mukherjee], upon request by the reviewers.

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**Appendix**  
**WHOQOL-BREF domains**

<b>Domain</b>	<b>Facets incorporated within domains</b>
Physical health	<ul style="list-style-type: none"> <li>➤ Activities of daily living.</li> <li>➤ Dependence on medicinal substances and medical aids.</li> <li>➤ Energy and fatigue.</li> <li>➤ Mobility.</li> <li>➤ Pain and discomfort.</li> <li>➤ Sleep and rest.</li> <li>➤ Work Capacity.</li> </ul>
Psychological	<ul style="list-style-type: none"> <li>➤ Bodily image and appearance.</li> <li>➤ Negative feelings.</li> <li>➤ Positive feelings.</li> <li>➤ Self-esteem.</li> <li>➤ Spirituality / Religion / Personal beliefs.</li> <li>➤ Thinking, learning, memory and concentration.</li> </ul>
Social relationships	<ul style="list-style-type: none"> <li>➤ Personal relationships.</li> <li>➤ Social support.</li> <li>➤ Sexual activity.</li> </ul>
Environment	<ul style="list-style-type: none"> <li>➤ Financial resources.</li> <li>➤ Freedom, physical safety and security.</li> <li>➤ Health and social care: accessibility and quality.</li> <li>➤ Home environment.</li> <li>➤ Opportunities for acquiring new information and skills.</li> <li>➤ Participation in and opportunities for recreation / leisure activities.</li> <li>➤ Physical environment (pollution / noise / traffic / climate).</li> <li>➤ Transport.</li> </ul>