

## A Study of College Judo Players Physical Fitness Evaluated by Harvard Step Test

**R.M.Kadam**

BNB College Digras, MS, India

### Abstract

Judo is at a junction today. One path leads to development and improvement. The other leads to weakening, decline, and decease. The choice is clear; rebirth or reversion. What is the cause of this sad state of affairs? It is the battle between the views of judo as a sport or as judo. Is judo a sport? Current judo is commonly described as a sport, a fighting art, a spiritual discipline, a system of physical education and entertaining activity."Physical fitness is the main regular for life, to reach any goal and too central a fit life. Physical fitness can be renowned by cardiopulmonary competence test like Physical Fitness Index (PFI %) which is an influential exhibition of cardiopulmonary efficiency. sampling 31 BNB college Digras Judo players who commonly practiced for a minimum period of 3 years and who were in the age group of 18-25yrs were included and 31 controls age (19–25 years) all male participants from BNB college Digras judo players were selected by randomization. Further based on a number of years of judo training 31 judo players were divided into two groups Judo A ( $\leq 5$  years) and Judo B ( $> 5$  years of training).Harvard step test check among Judo groups show mean test time was high for Judo B group. Mean Heart rate between 1 – 1.5 min was less in Judo B group than A group the difference was observed to statistically significant. Physical fitness index score was found to be significantly more in Judo B group than A group. In this study it is observed that Harvard step test were significant suggesting a quicker retrieval in senior players (B group) due to aerobic training. Lengthier period of practice might be causal to the high Physical Fitness Index in the senior group. Conclusion of study is the duration of the training period positively have an optimistic effect on physical fitness and can be used to distinguish correctly higher and lower level judo players. Values of Physical Fitness Index are considerably greater or advanced than normative values for similarly aged untrained individuals showing to judo training.

**KEYWORDS-** judo –Japanese Martial art, Physical Fitness.

### Introduction-

Judo is at a junction today. One path leads to development and improvement. The other leads to weakening, decline, and decease. The choice is clear; rebirth or reversion. What is the cause of this sad state of affairs? It is the battle between the views of judo as a sport or as judo. Is judo a sport? Current judo is commonly described as a sport, a fighting art, a spiritual discipline, a system of physical education and entertaining activity." Judo and sports have in common fixed physical training in specific skills and routines. Sports are designed to provide physical fitness, entertainment and, through competition, the attainment of awards, monetary gain, and/or public acclaim. Judo has as its ultimate goal the perfection of the practitioner's moral and spiritual self.

Judo is indefinable because the narrow interests of a few have been allowed to dominate the scope of judo. There is within judo today a growing dissatisfaction with the current situation. This is revealed in decreasing membership in those organizations devoted to

sports judo, the continuing lack of substantial success of U.S. judoka in international competition despite all the effort directed to this end, and the growing calls for a return to "traditional judo." When people decide to study Judo they usually come with several goals in mind. They often want to learn self-defense skills foremost. There is also a desire to improve their health and physical fitness. Finally, there is a desire to improve their mind and spirit. Judo teaches discipline, respect, humility, dignity, and compassion. Most students come to value these metaphysical and esoteric lessons over the physical techniques which they have learned.

There is a clear schism in judo between the sports enthusiasts and the traditionalists. Sports judo today is dedicated primarily to the development of contest champions. The overall goal of championship training produces a very steep pyramid structure to the judo population. Increasingly, only the strongest and most gifted athletes are engaged in a regular competition to ascend to the pinnacle of victory. Training is geared to support this elite corps. While it may be said that many people begin training in judo and even compete at the local level, it is clear that the system is, in some ways, designed to eliminate these people in search of a few champions. In the pragmatic training necessary for victory in this game, self-defense training and the development of spiritual growth is often neglected.

Judo is the education of methods with which you may execute if you wish to execute, hurt if you wish to damage, calm if you wish to reduce, and, when confronted, defend by hand." Judo was once widely considered a valid form of self-defense training. This is no slower correct. Because it is sometimes thought of as an eccentric form of sports wrestling, many people do not take it seriously as a form of self-defense. This is especially true of the students of other judo. Yet Dr. Kano's statement makes it clear that he considered judo to be effective self-protection. Kano Sensei intended that judo free practice be the primary training method followed closely by kata (rehearsed, formal exercises). Competition was clearly last in his priorities.

Physical fitness is the main regular for life, to reach any goal and too central a fit life. Physical fitness can be renowned by cardiopulmonary competence test like Physical Fitness Index (PFI %) which is an influential exhibition of cardiopulmonary efficiency. The AAHPERD suggested this test to workout health-related physical fitness program in adolescence. Physical fitness is designated in many methods. This is a multi-dimensional idea that has been clear as a set of fundamentals that people obtain that relates to the competence to realize physical effort. It is involved of skill associated, health-related and physiologic mechanisms. Result of exercise to have good physical fitness is well known since olden Vedas. But does period of exercise has any outcome on physical fitness levels is still not very clear in judokas so, this study was assumed to assess the effect of a period of working out the period on physical fitness index in college judo players?

According to P. Shurma in her study on Fitness scores of Indians assessed by the Harvard step test (HST) assesses the physical fitness of individuals. The standard 50.8 cm step of the HST is tailored to western anthropometrics and is rather high for the average Indian whose height is relatively less. Therefore, the height of the step is lower (41 cm) in the modified HST. Even so, it is unlikely that a single step-height will be appropriate for all Indians with different heights. Therefore, the objective of the present study was to verify the same in a group of Indian students with heights ranging from 1.45 to 1.83 m. on 41 cm

high step. in his study was conducted on 74 healthy subjects in the age group of 17-22 years. The protocol comprises stepping up and down a 41 cm high step at a rate of 30 times/min for the duration, not >5 min. The total duration of stepping exercise and the post-exercise pulse count for 30 s after 1 min recovery was noted and used for calculating the physical fitness index (PFI). The height of subjects positively and significantly correlated to the fitness score and also to the duration of exercise. The mean fitness scores of subjects with a height of  $\geq 1.66$  m were significantly higher than mean scores of subjects with height  $< 1.66$  m. The shorter duration of effort and the lower score in short subjects may be due to muscle fatigue rather than cardio-respiratory impairment. Our findings suggest that the height of the step used in the HST should be adjusted according to the height of the subject. Considering our small sample size, further studies are required to delineate the effect of step height on PFI in HST.

Dharmesh Parmar conducted the study on Study of Physical Fitness Index Using Modified Harvard Step Test in Relation with Gender in Physiotherapy Students the Physical Fitness index measures the physical fitness for Muscular work & the ability to recover from the work. The present study was undertaken to assess the physical fitness index using Modified Harvard Step Test in the young adult in the age group of 17 to 24 years with a varying degree of physical activities. Method: Cross-sectional study was done on 105 physiotherapy students and Physical Fitness Index was measured using the Modified Harvard step test. Data Analysis: Statistical analysis was done using descriptive analysis and Chi-square test. Result: Statistical analysis shows that physical fitness in physiotherapy students is not satisfactory. And there is a significant difference in physical fitness index between boys & girls. Conclusion: Physical fitness of physiotherapy students in Ahmedabad Physiotherapy College is not satisfactory and Female are having better physical fitness.

According to Savita Hiremath ,Parwati Patil, ShivaprasadS Gouda Assessment Of Anthropometry And Physical Fitness Index Among Indian Wrestlers By Harvard Step Test. Wrestling is a sport for everyone , athletes of all sizes and ability are drawn to wrestling for the simple reason that it is fun. It is a sport that tests the strength, stamina, and skill of two opponents. Wrestling is a physical chess match featuring moves and counter moves, endurance, strength, intelligence, and quickness. Inspire of all these complexities, a key area that plays an important role in Wrestling is a wrestler's physical fitness. Objective: To assess the physical fitness index in Indianwrestler's by Harvard step test and also to compare fitness with age and sex matched sedentary controls. Method: 35wrestler's divided into two groups depending on duration of training and age and sex matched 35controls were the participants in this study. Height, weight and BMI were calculated. Physical fitness index was calculated using Harvard step test. Students unpaired 't' test, where significance of the p value was  $< 0.05$  was used to compare two groups Results (Group B) Senior players showed a significantly higher physical fitness index than the juniors. The wrestler's group showed higher physical fitness index than the controls. conclusion: Duration and frequency of training period certainly have positive influence on physical fitness levels and can be used to discriminate properly higher and lower cadre wrestlers

#### **Methodology-**

Using general sampling 31BNB college Digras Judo players who commonly practiced for a minimum period of 3 years and who were in the age group of 18-25yrs were included and 31 controls age (19–25 years) all male participants from BNB college Digras judo players were selected by randomization. Further based on a number of years of judo training 31 judo players were divided into two groups Judo A ( $\leq 5$  years) and Judo B ( $> 5$  years of training). By using questioner Descriptive data of the college judo players like age, medical history, training schedule regarding the number of years of judo practice, and dietary history were collected. Data like height, weight, and Body Mass Index were noted from the contributors. Body Mass Index is derived from body mass and figure to assess normality for body weight and is calculated by dividing body weight in kilograms by height in meters squared. Physical fitness index was calculated on the Harvard step test which is vital step 20 inches tall stopwatch, metronome provides beat each 2 seconds at a degree of 30 per minute. The college judo players steps up and down on the podium at a speed of 30 steps per minute (every two seconds) for 5 minutes. Judoplayers be seated on close of the test, and the number of heartbeats is considered among 1 to 1.5 minutes. After concluding test time in seconds was noted down.

Scoring by

100 X test duration in seconds

Physical Fitness Index = -----

5.5 X pulse count between 1 and 1.5 minutes

Judo throwing Fitness test which was done on the same judo participants in our previous work, the total number of throws in that particular test was correlated with physical fitness index. Statistical analysis involved measurable variables summarized through mean and standard deviation. Difference between the mean of the two groups was tested using student's unpaired" test, where the significance of the p-value was  $< 0.05$ . To assess the strength of association between performance (number of throws) in the special judo fitness test and physical fitness index among Judo players Karl Pearson's correlation coefficient was calculated.

The mean age group of BNB College Digras judo players is average is 21.5 and divided in 20 players in A judo players group and 20 players in B judo players control group. Basic parameters height and weight recorded by standard protocol and Body Mass Index were calculated.

The Harvard step test check among Judo groups show mean test time was high for Judo B group. Mean Heart rate between 1 – 1.5 min was less in Judo B group than A group the difference was observed to statistically significant. Physical fitness index score was found to be significantly more in Judo B group than A group (Table A)

When compared with controls mean of total test time and of the Harvard step test was more in judo players than the control group with a statistically significant difference. Growth in Heartbeat between 1 to 1.5 minutes was low for judo players than controls.

Change among two groups was again significant as shown in Table B. Correlation among an entire number of throws in Judo Fitness Test and Physical Fitness Index it was realized that there was an optimistic correlation between Physical Fitness Index and performance.

Table A. The Harvard step test among Judo players.

Variables	Judogroup A	Judo group B	P Value
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Height (cms)	159.8 ±7.09	158.5 ±15.34	0.047
Weight (kg)	59.6 ± 7.98	58.9 ± 10.89	0.565
Body Mass Index	23.9 ± 1.87	23.1 ± 3.98	0.186
Harvard step test			
Test time (sec)	279 ± 35.69	283 ± 28.79	0.598
Heart beat b/w 1 to 1.5 mins	59.2 ± 6.91	53.2 ± 6.83	0.021*
Physical Fitness Index score	81.4 ± 13.92	86.3 ± 14.75	0.029*

Table B. The Harvard step test of judo and control groups

Variables	Judo Group	Control group	p Value
Height (cms)	159.3.9± 10.21	164.3 ± 9.87	0.075
Weight (kg)	59.2 ± 8.76	60.8 ± 8.91	0.356
Harvard step test			
Total Test time (sec)	271.9 ± 33.29	209.6 ± 82.16	0.000*
Heartbeat between 1 to 1.5 mins	56.8 ± 6.95	69.4 ± 7.01	0.000*
Physical Fitness Index score	79.98 ± 18.93	59 ± 21.81	0.000*

The value of judo using competitor strength against him and familiarizing well to changing situations. The basic idea behind the sport of Judo is to use rival's fortes to one's individual benefit and to take improvement of an opponent's faintness to attain known control over that competitor. Studies in young judo players reflect that physical fitness as a necessary for high performance in this judo

In this study it is observed that Harvard step test were significant suggesting a quicker retrieval in senior players (B group) due to aerobic training. Lengthier period of practice might be causal to the high Physical Fitness Index in the senior group. Fitness index is straight proportional to the period of exercise and inversely relative to post-exercise pulse counts. The advanced Physical Fitness Index score in a player group than controls shows that certainly the players are more actually fit than the controls that are credited to the effect of their exercise sessions. The correlation between an entire quantity of throws in Judo Fitness Test and Physical Fitness Index positive correlation was observed between Physical Fitness Index and presentation showing a straight relationship between physical fitness levels and the player's performance in their actual sport.

Top level sports achievements are occasional and need ample of exertion and promise. Most of judo players fight to attain them, to break through several kinds of human restrictions, but only a few are successful. And their victories are ever more reliable on recent developments in sport training technologies and technical conclusions. After every prominent sports achievement, either individual, there is a group of experts and a methodically expanded training program. Individualization of an exercise program depends on a vision the trainer can get into a judo players real state of physical fitness and on the data acquired from even observing during the development of sports training. An accurate optimal of tests should provide analytic insights into the morphological, motor and functional components of judo player fitness.

### Conclusion

From the above study, it is observed that the duration of the training period positively have an optimistic effect on physical fitness and can be used to distinguish correctly higher and lower level judo players. Values of Physical Fitness

Index are considerably greater or advanced than normative values for similarly aged untrained individuals showing to judo training.

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