Chapter - I

INTRODUCTION

Beyond the sense are the objects,
Beyond the objects is the mind,
Beyond the mind, the intellect,
Beyond the intellect, the atman,
Beyond the Atman, the non-manifest
Beyond the non-manifest, the spirit
Beyond the spirit there is nothing,
This is the end, the pure consciousness.

KATHA UPANISHAD

Judo in 'wide sense', can be physical culture; in the 'narrow sense', a sport, as physical culture; in the 'narrow sense', a sport, as physical it can be an entrance into a special form of physical experience of an intrinsic need, an increase of
awareness of what the body is capable of doing. As a sport the individual can participate in violent competition, experience the conflict of one skill oppose to another. As a man-made skill it can develop the bad as well as the good in any personality.¹

Winning laurels at international sports arena has become a prestige issue linked with potential system and as such nations i.e., with each other to produce top class sportsman for international competitions. For this, research is systematically conducted to identify factors that help in achieving levels of skill which a player can attain through proper coaching and evaluation.²

Judo is an art and a sport, founded by Jigaro Kano of Japan in 1882. He took the best of Jujitsu self-defence techniques and cut out those that were harmful. He modified others so that they could be practised safely. Judo uses skill and flexibility for attack and defence. Judo is known as “Gentle Way”. Strength is

of course applied but it is even more important to know how to use it. In emergencies Judo can be a form of self-defence.\(^3\)

In the last few decades Judo has gained tremendous popularity all over the globe. The popularity of Judo is still increasing at a rapid pace and this happy trend is likely to continue in the future also. When one looks at the history of Judo one sees that the total number of participating countries and sportsmen have increased steadily.

If we compare the ancient and modern Judo, the result shows that the modern Judo has adopted various scientific methods. On the other hand ancient Judo was full of traditional type of training. Though Judo is also gaining popularity in our country. But everyone in our country is not familiar about this sport in true sense.

Judo, as a popular sport, is now universally held in high esteem. The Intrinsic spirit of the Kodokan Judo, according to its founder Prof. Jigaro Kano, is

to consummate one's character through training. It pursues ideals and aims higher and deeper than other ordinary sports that merely can test for victory in games.\(^4\)

Judo may be described as a science for the study of potential powers of the body and mind and the way of applying them most efficiently in combative activities. Hence it is involved with the study of the laws of gravity, dynamics and mechanics as related to the function of the human body. Efficiency in Judo is certainly a valuable asset, but the real value applied to life are the effects which the training produces on the state of the body and mind.\(^5\)

The change has not only occurred in its popularity but the training process of Judo has also experienced drastic changes. As manifested in the literature available, the way imparting training in Judo has also been changed. Various scientific studies have been done in relation to this sport.


Man's life is a continuous flow of activity. Every moment he is doing something and his every activity is the result of the joint efforts of the body and mind. More integrated efforts yield more success to the individual. Things in this world outside ourselves comes via the body (sense organs) into our mind and things in our mind reach the world outside through the body.⁶

There are many systems of what called meditation that attempt to refine the mind by controlling it in one way or another. All such attempts are difficult and far form achieving anything tends to take away life. Because of the difficulty and in efficiency of their methods of mind control, the idea has become accepted that the path to pure consciousness is difficult. This is a fallacy and stems from ignorance of the nature of the mind. There is great difference between directing the mind in a particular direction through concentration and directing it by permitting its natural affinities to operate. We know that it is the tendency of every mind to flow towards a field of greater happiness. By turning the mind inward the field of absolute bliss, creativity and wisdom. It is upon this principles that our system of

meditation (i.e. Transcendental Meditation) is based, and consequently its practice is not difficult.

The transcendental meditation, as revived by Maharishi, is remarkably simple. It deals directly with the activity of mind-thinking—but in a way that is mechanical, abstract, and precise rather than intellectual or reflective. It is basically a procedure for experiencing the mechanics of thinking process in a new direction. Normally one is aware of a thought all at once, in its fully developed form. Obviously, there must be prior stages in the development of thought; it is some how possible to bring these stages to conscious awareness in a systematic way? The procedure of doing so consists essentially of two elements; a type of thought optimal for this purpose; and a method to experience it at successive prior stages of its development (Note that we are speaking not of the "unconsciousness" as it is usually conceived in psychology, but rather of the actual mechanics of the thinking process.

Sports is a multidimensional activity. It is mainly physiological dimension as well as physical, psychological, social and technical aspects, which plays a significant role to acquire zenith performance. In todays competitive world of
sports, the physiological fitness of a team or player is foremost required than any other aspect. Since every sports has a different physiological demands on the body depending upon the nature, intensity, and duration of the game or activity, the athletes physiological fitness must be developed accordingly to bring out the best possible accordingly to bring out the best possible performance of a team or athlete.

Coaches and physical educators teachers appear to have difficulty in understanding how to interpret the physiology of energy sources and how to use this information to improve the physical conditioning of their athletes and students.⁷

The peculiarity of Judo match is that it is a contest between two partners and consist of executing the techniques while grappling with each other. The outcome of the match depends on the sharpness and dexterity of executing the decisive technique. Consequently, the most important factor in winning a match is the Waza (technique). However, in an actual contest, the supporting factors of

physical fitness is also of great importance. In order to be able to use freely and effectively the various techniques, one must have adequate muscle strength, instantaneous strength, agility and stamina or endurance. Actually according to Ikai and Kaneko, pulse rate reaches the human limit of 180 per minute during a Randori (free exercise). Also the result of measurement of energy metabolism by Sugimoto indicated that the practice of Judo imposes a considerable load on the respiratory and cardio-vascular function⁸.

Judo is dynamic physically demanding sport that require both glycolytic energy production related to bursts of intense muscular activity and an adequate aerobic reserve to sustain activity over the five minutes match duration. High level of physical activities are needed to prevent injury and to offset fatigue which could lead to faulty bio-mechanical techniques, competition is organized by weight division and therefore low adiposity and high strength per unit body mass are desirable characteristics in these athletes. Training programme for Judokas have typically been based upon intuition and personal experience, current information

---

regarding the physical and physiological characteristics of Judokas is required in order to provide an objective basis for the development of programmes.

Judo activity demands speed and appreciable anaerobic reserves for quick explosive movements. Judoka should also have considerable aerobic capacity to recover quickly to exhibit better performance in the subsequent bouts.

For the physiological system of the body to be fit, the systems must function well enough to support the specific activity that the individual is performing. Moreover different activities make different demands upon the organism with respect to circulatory metabolic neurological and temperature regulative function.

'Body composition plays an important role in athletic performance. A substantial amount of evidence is available to indicate that the relative degree of fat free body weight is an important factor contributing to higher levels of physical performance in activities where the total body weight must be moved. In addition

---

studies have shown that high percentage of body fat not only serve as dead weight but also lessens the relative ability to support oxygen to the working muscles then cutting down on one's cardio-vascular endurance\textsuperscript{10}.

The assessment and prediction of body composition has gained widespread application in various exercise science discipline. There are application to physiology of exercise, bio-mechanics, exercise biochemistry, anatomy, motor integration, and other allied medical fields that consider such topics as nutritional and dietary assessment, the man-machine interface, as well as various environmental concerns, what ever the application, one major area of interest is the predictive accuracy of body composition assessment, particularly percentage body fat and lean body weight\textsuperscript{11}.

With training and conditioning the heart become more efficient and is able to circulate more blood while beating less frequently. For a standard amount of

\textsuperscript{10} Larry G. Shauer, "Essentials of Exercise Physiology" (Delhi: Surjeet Publication, 1981), pp. 186.

work the heart become slower as training progresses. These heart rate changes indicate a decreasing load on the cardio-vascular adaptation to exercise. Blood pressure is also influenced by training. Prolonged efforts in the untrained subjects leads to progressive fall of the systolic pressure which indicates approaching exhaustion.\footnote{Warren R. Johnson and E.R. Buskirk, "Science and Medicine of Exercise and Sports" 2\textsuperscript{nd} ed. (London; Harper-Row Publishers, 1974), pp. 278-279.}

It is perhaps evident that there is growing realization of importance of physiological variables enhancing the human health and performance. Therefore, physiological variables such as anaerobic power, vital capacity, resting heart rate, resting respiratory rate, lean body weight, body fat percentage and breath holding capacity receive special consideration and it is an important pre-requisite for outstanding performance in combative sports.

* Proponents of the Transcendental Meditation technique state that this simple mental process bring about increased efficiency in action after meditation. Efficiency is an index of skill developed through learning characterized by smoother and more integrated behaviour. Efficiency requires good coordination
between body and mind. Lack of coordination results in unskilled or poor movements which is dominated by cortical control that supersedes reflex and integrated mechanism.\textsuperscript{13}

In technical sports beautiful and graceful movements are a product of well developed technical skills and co-ordinative activities. The co-ordinative abilities to a great extent determines the maximum limits to which sport performance can be improved in several sports especially the sports which depend largely on technical and tactical factors.\textsuperscript{14}

Seemingly, coordinative abilities have no essential significance in sports with standard structures of the movements and relatively constant permanent competitive conditioning. However, purposeful development of coordinative abilities in the given case are one of the determining aspects of sports functioning, on which above all depends the level of the sports technical and tactical mastery. If


account is not taken of this, constant specialization in standard form of movement will lead to stagnant motor skills and will narrow down the very possibility of their restructuring and renewal.\footnote{L. Matveyev, \textit{Fundamentals of Sports Training}, (Moscow: Progress Publishers, 1981), p.147.}

There are seven identified coordinative abilities. These are: (1) Orientation ability (2) Differentiation ability (3) Coupling ability (4) Adaptation ability (5) Rhythmic ability (6) Balance ability (7) Reaction ability. All the coordinative abilities are important for learning of sports techniques and for their continuous refinement and modifications during long term training process. The motor learning ability depends to a large extent on the level of coordinative abilities.\footnote{Singh, \textit{Sports Training,} pp. 225.}

When executing “Coordination assignments” are determined first of all by the fact that they demand utmost concentration of attention, subtle differentiations and regulations considerable with, alertness, creation of new forms of movements, coordination and what is more restructuring of the firmly-formed coordination
links present a rather difficult task for the nervous system. Naturally it is best of all to tackle it at the beginning of the main part of the training session.\(^{17}\)

Coordinative abilities are primarily dependent on the motor control and regulation process of central nervous system. For each coordination ability the motor control and regulation process function in a definite pattern when a particular aspect of these functions is improved then the sports-person is in a better position to do a certain group of movements which for their execution depends on the C.N.S. functioning pattern.\(^{18}\)

The coordinative function of the central nervous system and the one of its properties which Ivan Pavlov called plasticity are given a leading role in physical treatment of the essence of coordinative abilities. The ability qualitatively to coordinate movements undoubtedly depends on the perfection of function of the analyzers.\(^{19}\)


\(^{19}\) Matveyev, "Fundamental of Sports Training," pp. 146.
To train such training means can also be used as ancillary means of fostering, the improvement of analysers function while at the same time the athlete can stay relatively passive. The analysers: as part of the whole neuromuscular system should be seen as a part of the “Physiological Sub-stratum” of coordination. Their functions co-determines the level of the coordinative abilities. This should be taken in to consideration and these means only applied as an additional means to develop these functions.20

Insufficient training of coordinative abilities limits the performance ability specially at higher level. On the contrary, better developed coordinative abilities provide essential base for faster and effective learning, stabilization base for faster and effective learning, stabilization and valuation in technique and their successful execution in game situation. The quality of performance of all fundamental mechanical skills, the rhythm, flow, accuracy, amplitude etc. are improved by coordinative ability, it helps in developing very fine extra credible skills21.

---


Coordination is important for the development of Judo performances in all weight categories. The coordinative abilities play a vital role during practice and competition situations. In Judo as we know that the performance is significantly based on coordinative abilities like reaction time, balance, rhythm etc., during the uchikomi (repetition practice) the rhythm ability and coupling ability plays a major role as the technique to be perfected by repeating the movement a number of times. Kuzushi (off-balancing the opponent) is one of the pre-requisite for applying a successful throw which needs the attacker to be in good balance and posture. A learned judoka uses his reactions to get advantages of the opponent's slow and improper attacks in applying counter throws. In the game of Judo after each bout a judoka fights against a new opponent of different height, posture, measurement and to some extent different weight (specially in open weight category) that enable him to adjust and transform his grips, techniques, posture and movement depending on the opponent, hence to meet such situation he requires a top class differentiation ability. During the osaewaza (ground work) there are numerous situations when a judoka tries to hold the opponent and the opponent lying below is unable to see the movements and positions adopted by the inclination of weight and body parts of the opponent touching him, it is where he uses his orientation ability to defend himself from holding, locking and chocking technique.
Robert\textsuperscript{22} show, and David Kolb conducted a study to test the reaction time following the Transcendental Meditation Technique, two groups, each composed of 25 college students matched for age and sex, were compared on their performance on a reaction time test. One experimental group (meditators) and control group (Non-meditators) initially responded 100 times to a light stimulus and then either meditated for 20 Minutes (experimental group) or rested with eyes closed for 20 min (control group). After 20 minute interval, 100 more trials were presented. On the first set of trials the meditators showed lower reaction time than nonmeditators. Results on the second set of trials showed an increase in the speed performance in the meditators and a deterioration of performance In the control group.

M. Kesav Reddy and V. Raghavender Rao\textsuperscript{23} studied the effect of the Transcendental Meditation programme on Athlete performance. Research on the Transcendental Meditation technique suggests that athletes practicing this simple


technique could improve their physical and mental condition, and hence their athletic performance more quickly than non-meditating athletes.

To examine this possibility, athletes desiring to learn Transcendental Meditation Technique were randomly assigned to an experimental group and a control group, each 15 subject. Athletic performance test, physiological tests and an intelligence test were administered to both groups before the experimental group received instruction in Transcendental Meditation and again six weeks after the experimental group was taught Transcendental Meditation. The meditating athletes improved significantly more than the non meditating control group in 50 Meter dash (P< 0.001), the agility test (P = 0.0056) and a reaction time and coordination test (P< 0.001). The mediators also improved more than the controls in the shot put and in a strength test, but not significantly more. The physiological improvement of the experimental group was superior to that of the control group an all measures; cardiovascular efficiency (step test) (P = 0.0011), respiratory efficiency (vital capacity) (P< 0.001), body weight (NS), systolic blood pressure (P< 0.001), than controls. There results indicated that the Transcendental Meditation programme helps the athletes to develop a broad range of qualities.
essential to his performance; agility, speed, endurance, fast reactions, and mind-body coordination.

Today all over the world, physical educators and coaches are facing their greatest challenge in handling problems in scientific way, that is, to give their sportsman proper and progressive guidelines based on scientific approach which lead to desired results.

Often it has been seen that in India, coaches and physical education select only those training methods with which they are familiar, without the consideration of the proper effect of the training. Often training fails to accomplish the desired results because the coach or physical educator fails to recognize the training properly.

As coaches and physical educators follow different methods of training for the development of Judo performance alongwith strength element and not much work has been done to show superiority of one training method over the other, hence the scholar after going through various research studies published in the
volumes of Scientific Research on the transcendental meditation programme decided to undertake this study. The results of many concerned studies showed that Transcendental Meditation improves every faculty of human being. The scholar himself practiced transcendental meditation technique which lead to positive effects on his body and efficiency of mind. The obvious fact remains that meditation helps in enhancing concentration which in term boosts the performance because of integrated approach of body and mind, due to which scholar felt inclined to take up this study to work and find out the effect of transcendental meditation on selected physiological variables and coordinative abilities of Judokas.

STATEMENT OF THE PROBLEM

The purpose of the study was to find out the effect of Transcendental Meditation on selected Physiological variables and Coordinative abilities in Judo.
DELIMITATIONS

1. The study was delimited to the thirty male Judokas of L.N.I.P.E. and Jiwaji University, Gwalior.

2. The study was also delimited to the following Physiological Variables:
   a) Anaerobic power
   b) Vital capacity
   c) Resting respiratory rate
   d) Resting heart rate
   e) Body composition
      I) Total body fat percentage
      II) Lean body weight

3. The study was further delimited to following coordinative abilities.
   a) Reaction ability
   b) Orientation ability
   c) Differentiation ability
   d) Balance ability
   e) Rhythmic ability
LIMITATIONS

1. Daily routine, food habits and social background of the Judokas which might have had an effect on the study has been taken as the limitation for the study.

2. Non-availability of sophisticated instruments for the collection of data was also considered as one of the limitation of this study.

3. Any bias that might have existed due to insincere responses from the subjects was also considered as another limitation for the study.

HYPOTHESIS

From the scholar's own understanding of the problem and as gleaned through the literature it was hypothesized that their will be no significant effect of Transcendental Meditation on selected physiological variables and coordinative abilities in Judo.
Definitions and Explanations of the Terms

Judoka

The word Judoka is a Japanese term which means male judo players.

Meditation

"Meditation is a technique for penetrating to deeper levels of the mind for the sake of the expansion of consciousness."\(^{24}\)

Transcendental Meditation

"Transcendental Meditation is the technique defined as "turning the attention inwards towards subtler levels of a thought until the mind transcends the

experience of the subtlest level of thought and arrive at the source of the thought.”

**Anaerobic Capacity**

The anaerobic capacity or power is the ability to jump, sprint, put the shot, throw the javelin or perform fast sports converting energy to power. Power is performance of work expressed per unit of time. The terms explosive has been associated with the anaerobic metabolism and the test to measure it.

**Vital Capacity**

Vital capacity is defined as the largest volume of air that can be exhaled after deepest possible inhalation.

---


26 Ibid., p. 619.

Resting Heart Rate

Best and Taylor\textsuperscript{28} have stated that the resting heart rate is pressure change transmitted as a wave through the arterial wall and blood column to the periphery while the person is at rest.

Body Composition

Body composition is the proportion of the lean, fat free body mass and depot fat, it is one of the most important morphological features characterizing human organism\textsuperscript{29}.


**Lean Body Weight**

The total Body weight minus the weight of the body's fat is called lean body weight\(^{30}\).

\[
\text{Lean Body Weight} = \text{Total Body Weight} - \text{Weight of Fat}
\]

**Total Body Fat Percentage**

The percentage of fat contained in the body. It is measured in terms of percent of the body weight\(^{31}\).

---


**Resting Respiratory Rate**

Number of breaths taken in a minute or number inspirationexpiration in a minute.\(^{32}\)

**Coordinative Abilities**

"Coordinative abilities are understood as relatively stabilized and generalized patterns of motor control and regulation process." (Those enable the sportsman to do a group of movement with better quality and effect).\(^{33}\)

**Reaction Ability**

"It is the ability to react quickly and effectively to a signal."\(^{34}\)

---

\(^{32}\) Ibid, p. 184.


\(^{34}\) Ibid., p. 166.
Orientation Ability

"It is the ability to determine the position and movements of the body in time and space in relation to a definite field of action."\textsuperscript{35}

Differentiation Ability

"It is the ability to achieve a high level of fine tuning or harmony of individual movement phases and body part movements."\textsuperscript{36}

Balance Ability

"It is the ability to maintain balance during whole body movements and to regain balance quickly after the balance disturbing movements."\textsuperscript{37}

\textsuperscript{35} Ibid., p. 166.
\textsuperscript{36} Ibid., P. 165.
\textsuperscript{37} Ibid., p. 167.
Rhythmic Ability

"It is the ability to perceive the externally given rhythm and to reproduce it in motor actions."38

Significance of the Study

As the field of physical education and sports is becoming more and more keen competitive and scientific, the attention is being diverted by the physical education and sports scientists to develop the best possible and suitable method to enhance the performance. Numerous researches are being carried out to ascertain the best, easiest, effective, and the most profitable and economical method of selecting and training athletes in order to get the best performance from them. As judo is included in the Asian Games and Olympic Games and much other International competitions like the others games, every nation. Strive to win International prestige by winning such competitions. Not many scientific investigations are undertaken In India to prove or substantiate the worth of various demanding parameters in Judo> The selection and training can be done with

38 Ibid., P.167.
adequate knowledge of Transcendental Meditation of the successful Judokas. The result of the study may contribute the promotion of judo particularly in the competitive field, in the following ways:

1. The results of the study may provide an authentic understanding of practicing Transcendental Meditation for Judokas.

2. The results of study may highlight the effect of practicing Transcendental Meditation on coordinative abilities.

3. This study may throw light and open new vistas with regard to its training implication of coordinative abilities.

4. This study may be of significance with regard to provide a scientific explanation for the use of Transcendental Meditation and rejecting the concept of meditation in ancient times as a difficult technique used only for the attainment of supernatural powers.

***