YOGA FOR PERSONALITY, PHYSICAL FITNESS AND SKILLS OF NATIONAL FENCING PLAYERS IN MAHARASHTRA

INTRODUCTION

Massive development in Tele-communications and the quickness of information flow, due to rapid technological developments and the globalization of most human activities led to greater challenges facing this century’s generation and those who are responsible for educational systems in most countries of the world. All these led to the problem of dated knowledge; this means that knowledge provided to learners is no longer applicable in the future. So, knowledge itself has no value and the real value is concentrated in how to produce knowledge and gain it. Now, we seek total development of learners so that he/she can be graduate who gained proper knowledge and skills needed for creative work and production.

Physical education is an applied discipline that includes theories and practical applications. It, also, includes several connected and integrated fields, each of which has its own knowledge structure. But actually the used topics and concepts remain disconnected and finally lead to massive disconnected amount of knowledge that only aims at helping students to pass tests that merely assess the minimum level of knowledge. Fencing, as a sport has undergone several technological advancements and developments. These developments, in turn, led to new modifications and changes in the international rules and regulations to increase the difficulty level of the game. For example, match duration decreased from 4 minutes to 3 minutes while the number of touches 5 touches remained unchanged. When teaching and
training fencing skills, we should concentrate on developing the fencer’s sense as the integration of skills and sense is the way to progress.

With fencing, a fencer needs to sharpen his basic responses, have a certain level of physical fitness and mental strength. The main muscles that allow balance, agility and coordination are the ones to be focused on in a sport such as fencing. These are independent of cardio-endurance, standard muscularity and body-fat ratio.

Fencing has many features and skills fencer should have to be distinguished by from other sports because it requires a great efforts in specific time with ability to do his best continually at uneven periods for one or two days. Therefore, there is need to develop special training program for fencers to attain the basic physical fitness and concentration which is a key for success in fencing competitions. In this context it was thought to introduce a yoga program as a training exclusively for elite fencers. Numerous studies have demonstrated that Yoga has many physiological and psychological benefits (Cowen and Adams, 2005; Schure, Christopher and Christopher, 2008). In fact, Yoga is a significant part of worldly philosophy. It is an ancient Indian system which helps to keep person physically and mentally fit. It has been scientifically proved that yoga helps to improve concentration which is a key factor for achieving success in competitions. In this investigation, therefore, an attempt has been made to see the efficacy of yoga training on physical fitness, fencing skills, concentration and personality of national fencing players.

**Statement of the Problem**

Fencing is a complex, dynamic as well as technical and tactical, multidimensional sport. Factors like training hours, age, experience, sex, as well as the appropriate tactics the athlete engages in during a fight are partly responsible for fencing success (Barth and Beck, 2007). Yet, good fencing
performance is determined by advanced perceptual and cognitive abilities, like attention, perceptual skills, decision making, and visuospatial memory (Kogier, 2005). Therefore, fencers before initiate an offensive or defensive action have to select and analyze incoming visual cues coming from the motions and actions of the adversary (Roi and Bianchedi, 2008).

Moreover, attention/concentration is one of the main requirements for good performance in any sports. In fact, fencing needs high level of attention that becomes an important trait that characterizes each skill of attack and parry. The researcher himself is an expert in fencing sport and through his experience the researcher noticed that there is a need to develop a training program which will be beneficial for elite fencers to achieve success in competitions. Hence, this study entitled “Yoga for personality, physical fitness and skills of national fencing players in Maharashtra” is undertaken.

Problem and its Relevance

Fencing is an open-skilled combat sport that was admitted to the first modern Olympic games in Athens 1896. Modern fencing competition consists of three different weapons: the foil, the sabre and the épée, each contested with different rules. The actual matches represent only 18% of total competition time, with effective action time being 17 and 48 minutes. The physical demands of competitive fencing require a high level of aerobic and anaerobic conditioning. Further, the research reports indicate that body composition, is an important aspect in relation to an athlete’s performance (Clarke et al., 2003). The ideal body composition varies by sport, but in general, the less fat mass, the greater the performance potential. Previous studies (Vender et al., 1984; Goldberg and Elliot 1985) have demonstrated that success in fencing depends more on technique, speed, and agility as opposed to a high aerobic capacity and low percent body fat percentage. Although the findings of the study may be true, numerous studies (Guizani
2006; Satoru et al., 2007; Durstine 2008) confirmed that aerobic training increases the fencers’ reaction times, their attention capacities and causes an overall lower body fat composition. Furthermore, body fat distribution has been associated with atherosclerotic disease risk factors as well as injuries associated with back, knees, ankles joints and muscles problems (Dexter et al., 2007; Sheldon, 2008).

Furthermore, the physical demands of fencing are closely linked to the perceptual and psychological ones, and all are subjected to a continuous succession of changes during the bouts based on the behaviour of the opponent. For this reason it is difficult to identify a significant relationship between any one physiological characteristic and performance, and performance is more likely to be influenced by perceptual and neuro-physiological characteristics. Fencers need to anticipate the opponent and to mask their true intentions with a game of feints and counter-feints, which must be supported by an adequate psycho-physical condition to prevent central and peripheral fatigue. In fact, fencer needs to have high level of physical fitness and concentration. Recent research using 2006 Summer National epee fencers found that those who have high fear of failure are more likely to make mastery-avoidance and performance-avoidance goals (Anahas, 2007). In other words, those fencers who were afraid to fail were more likely to make goals that avoided failing, rather than making goals that aimed at winning.

Hence, the researcher of this study thought to introduce yoga training for fencers because yoga is a mind-body medicine which encompasses a range of methodologies that may be beneficial to the health of practitioners. Yoga is commonly practiced mind-body approach that has components centering around meditation, breathing, and activity or postures. In recent US surveys of adults, 7.5% reported having used yoga at least once in their lifetime and 3.8%–5.1% reported having used it in the previous 12 months (Saper et al., 2007 and Barnes et al., 2004). Hatha, yoga techniques, is a system for developing physical and mental well-being through stretching of all
muscle groups for strength, flexibility, and physical balance. A person assumes a series of stationary positions that use isometric contraction and relaxation of different muscle groups to create specific body alignments. There is also a deep relaxation component.

There are at least 2 mechanisms by which the practice of yoga or exercise may improve cognitive ability. Both may serve to improve mood and reduce stress. Lowered mood is associated with declines in cognitive function and Hatha yoga has been reported to produce improvements in mood comparable to aerobic exercise (Berger and Owen, 1992 and Berger and Owen, 1988), so this is one potential mechanism. Additionally, the practice of yoga emphasizes body awareness and involves focusing one’s individual attention on breathing or specific muscles or parts of body, so it is possible that yoga may improve more general attention abilities. It is not a far leap from Yoga Sutra (1.2), which says that “Yoga is the control of the whirls of the mind (citta), to consider attentional focus as a major aspect of yoga practice. It is unknown whether the attentional practice in yoga would generalize to conventionally assessed attentional function.

Attention is a multifaceted neural process that allows for differential central nervous system processing of information arising from the external or internal environment. Attention is important for the brain to use its limited resources for higher order processing of only certain salient stimuli and not of stimuli or information that may not be relevant. What attention actually consists of continues to be debated since the psychologist William James wrote more than 100 years ago, “Everyone knows what attention is. It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought”(James 1890). There are many aspects of and theories about attention (Posner and Dehaene 1994). The attentional and alertness systems are critical components necessary for all aspects of cognition, including memory and language.
Despite yoga's wide popularity, there are limited numbers of randomized and controlled studies on yoga using objective quantitative outcome measures, and these studies often have small numbers of subjects (Garlinkel et al., 1998). Hence, to evaluate the effect of yoga on fencing skills and personality in national fencers of Maharashtra aged 14 to 18 years, has been planned and to be executed.

Objectives of the study

- To assess the personality profile of national level fencers of Maharashtra.
- To measure physical fitness of national male fencers of Maharashtra.
- To measure the fencing skill of national fencers of Maharashtra.
- To design specific yoga schedule exclusively for the fencing players.
- To see the effect of yoga training on personality, physical fitness, and fencing skill of the national fencers of Maharashtra.

Hypotheses

After reviewing literature and related research studies, it has been hypothesized that-

H$_1$: The yoga training may improve personality of national fencers of Maharashtra.

H$_2$: There would be significant improvement in physical fitness parameters exclusively required for the fencers with regards to yoga training.

H$_3$: The yoga training may improve fencing skills of national fencers for Maharashtra.
Delimitation of the Study

This study will be delimited to

- the national level fencers of age 14 to 18 years from the state of Maharashtra.
- the variables viz., physical fitness, fencing skills and personality.
- 50 national level male fencers.

Limitations of the study

- Yoga training session will be limited to only one-hour daily, which may not be at par with the requirement for the fencers.
- Total duration of the experiment will be limited for two months only, which may not be sufficient to record improvement in the variables.

Operational Definitions of the Terms used

Fencing

The history of fencing parallels the evolution of civilization, back from the days of ancient Egypt and Rome, to the barbaric Dark Ages, to the fast and elegant Renaissance, up to the modern, increasingly popular fencing of today. Fencing has always been regarded as more than a sport; it is an art form, an ancient symbol of power and glory, and a deeply personal, individual form of expression. Fencing is and always has been an intrinsic part of life, from the dueling and battle of yore to the widely captivating movies and facets of popular culture such as Zorro and The Princess Bride. The earliest evidence of fencing as a sport comes from a carving in Egypt, dating back to about 1200 B.C., which shows a sport fencing bout with masks, protective weapon tips, and judges.
Yoga

This is a system of systematic practice of different kinds of postures (Asana), Breathing (Pranayam) and meditation, which primarily aims at providing health and physical fitness at psycho-physiological level.

Performance related physical fitness

Physical fitness is an ability to perform any task without undue fatigue. Physical fitness has many components viz., strength, endurance, flexibility, agility, balance, coordination etc. Nature of task ensures the requirement of various physical fitness components. This indicates that various types of physical activities require for different types of fitness components. In this study, to achieve better state of fencing performance the required level of fitness is known as performance related physical fitness.

Significance of the Study

This study is significant in the following ways:

➤ The finding of this study may benefit to all the fencing players and even to other sportsman of similar kind, since they can use yoga practices to improve their overall performance.

➤ Male fencers, aged between 14 to 18 years, can take advantage of the yogic exercises and breathing exercises to improve their flexibility, endurance, lungs capacity, concentration, neuro-muscular coordination which are essential factors to improve their physical fitness and concentration.

➤ Fencer as well as athletes may be benefited with the inclusion of yoga in their training schedule.

➤ The newly designed training schedule of yoga as a result of this study may be beneficial for the students participating in fencing event.
As yoga deals with the mental and emotional balance, it is expected that the result of this study may help the elite fencers to keep their mental and emotional balance during the difficult practical situation and during stress and tension due to their academic load too.

REVIEW OF LITERATURE

Williams and Walmsley (2000) studied Reaction time (RT), movement time (MT), total response time (RMT) and accuracy of elite and novice fencers under three levels of target choice (single-, two- and four-targets) with three variations of movement distance (short, medium and long lunge). In addition, electromyographic activity (EMG) of selected upper and lower limb muscles was used to compare the two groups. The elite subjects were faster for RT and RMT and displayed a higher level of accuracy. The hypothesis that increasing choice would cause increases in RT was not upheld. Except for some differentiation between the short and the two longer distances, the effects of movement distance were not marked. Qualitative and quantitative analysis of EMG revealed the high consistency of response patterns within subjects and highlighted the synergistic roles of selected muscles in distinguishing between elite and novice fencers. These findings confirm that differences in the technical skill of fencers can be distinguished in the laboratory through a combination of response timing measures in association with measures of muscle action. They also draw attention to practical implications for individual skill assessment and training. Analysis of pre-movement muscle activity provided moderate support for the hypothesis that it was part of a single control process and indicates that a dual process can involve both the maintenance of postural stability and the generation of movement. It is suggested that different movement contexts can lead to different levels of coordination between the system controlling posture and that controlling movement.
Roi and Bianchedi (2008) analysed the data from the literature on fencing with the aim of creating a psychobiological and multi-factorial model of fencing performance. Fencing is an open-skilled combat sport that was admitted to the first modern Olympic Games in Athens (1896). It is mainly practiced indoors, with three different weapons: the foil, the sabre and the épée, each contested with different rules. A fencing international tournament may last between 9 and 11 hours. Bouts represent only 18% of total competition time, with an effective fight time of between 17 and 48 minutes. The physical demands of fencing competitions are high, involving the aerobic and anaerobic alactic and lactic metabolisms, and are also affected by age, sex, level of training and technical and tactical models utilized in relation to the adversary. The anthropometrical characteristics of fencers show a typical asymmetry of the limbs as a result of the practice of an asymmetrical sport activity. Fencing produces typical functional asymmetries that emphasize the very high level of specific function, strength and control required in this sport. Moreover, the physical demands of fencing are closely
linked to the perceptual and psychological ones, and all are subjected to a continuous succession of changes during the bouts based on the behaviour of the opponent. For this reason it is difficult to identify a significant relationship between any one physiological characteristic and performance, and performance is more likely to be influenced by perceptual and neuro-physiological characteristics. Fencers need to anticipate the opponent and to mask their true intentions with a game of feints and counter-feints, which must be supported by an adequate psycho-physical condition to prevent central and peripheral fatigue. Fencing is not particularly dangerous; however, there is a fine line between a fatal lesion and a simple wound from a broken blade. The suggestions for injury prevention fall into three primary areas: (i) actions that can be taken by participants; (ii) improvements in equipment and facilities; and (iii) administration of fencing competitions. As in every other sport, the prevention of accidents must be accomplished at various levels and above all must involve the institutions that are responsible for safety in sports.

White et al., (2004) examined the relationship between perceived parental beliefs and young athletes' achievement goal orientations and personal beliefs about the causes of success in sport. Participants were 183 male and female athletes, 11-18 years old, involved in team sports. Athletes completed the Task and Ego Orientation in Sport Questionnaire, the Beliefs about the Causes of Sport Success Questionnaire, and two modified versions of the latter inventory to assess their perceptions of their parents' beliefs. Canonical correlation analysis revealed that perceived parental beliefs were related to goal orientations and personal beliefs in a conceptually coherent fashion. Thus, the perceived parental belief that effort leads to success in sport was related to athletes' task orientation and personal belief that effort causes sport success. In contrast, the perceived parental beliefs that superior ability, external factors, and using deceptive tactics are precursors to success in sport corresponded to athletes' ego orientation and the same personal beliefs. The findings are discussed in terms of their implications for understanding the socialization experiences of young athletes.
Wojcik et al., (2011) was to find weak link or links of musculoskeletal system (locutor system) occurred in fencers' body diagnosed by Performance Matrix Tests. The particular aim of this research was to estimate: if some weak links occur in a fencers' group, if all fencers in a group have the same weak links, if there is a correlation between weak links and training period length and if there is a connection between weak links and fencers' age. This study covered 14 female and 14 male fencers from the Fencing Section at the Warta Club from Poznań. An average age of fencers was 13.81 +/- 2.84. Performance Matrix Test was used as a research tool, due to which the presence of musculoskeletal system's weak links was measured. The obtained results showed that weak links of musculoskeletal system occur in a fencers' group, but it can not be given the exact answer if all fencers suffer from the same weak links. The research has not shown any evidences that there is a correlation between training period length and a number of weak links. Fencers' examination has not confirmed any correlations between fencers' age and the number of weak links. The tests have indicated that the most weak links appeared in a group of 12 years old fencers. Performance Matrix Tests are an easy and cheap tool for diagnosis of musculoskeletal system's weak link appearance. The early diagnosis of weak link/links can protect the fencer from musculoskeletal system's injuries. A lot of weak links found in fencers point out the need for undertaking work on local and global stabilization within a trunk and distal joints.

Poulis et al., (2009) examined the relation of leg preference and muscular strength in elite fencers. The dominant and nondominant extensor and flexor muscles of 30 elite fencers (M age = 18.2 yr., SD = 2.0 yr.; M height = 173 cm, SD=7.4 cm; M weight = 62.7 kg, SD=8.9 kg), who were members of the Greek national team, and 14 healthy, young, sedentary adults (8 men, 6 women; M age 23.4 yr., SD = 1.9; M height = 169 cm, SD = 10.5 cm; M weight = 66.3 kg, SD = 9.9) were tested for concentric isokinetic contraction at slow (30 to 60 degrees/sec.) and fast (240 degrees/sec.)
angular velocities. Significant multivariate differences were found between
groups for knee extension, angle of knee extension, knee flexion, and
flexor/extensor peak torque ratio. In contrast, no significant difference was
found between the dominant and nondominant legs. There was no significant
difference in the flexor/extensor peak torque ratio among any of the concentric
angular velocities tested. These findings suggest that long-term training in
fencing influences the strength characteristics of the lower limbs.

Stewart, Peredo and Williams (1977) determined the relation between
fencing success during a season of intercollegiate competition and various
physiological and morphological variables in 14 fencers. Bivariate and multiple
regression analysis was used to determine the extent to which the
independent variables, individually and collectively, accounted for the
variance in two measures of fencing success. The fencing scores correlated
significantly with VE max, Vo2 max, the 2 km run, and weight, while there was
no significant correlation between the fencing scores and submaximal heart
rate at 6 mph, and 1 min step test score, or other morphological
measurements. Cardiorespiratory fitness variables of Vo2 max and VE max
accounted for the greatest variance in each of the two fencing scores (57.7
and 58.1%, respectively). Although morphological factors play a role in
fencing success, their influence is small when physiological factors are
accounted for. Future energy-cost studies are suggested to determine the
physiological basis for the relationship between cardiorespiratory fitness and
fencing success.

Certain psychological and health variables are commonly measured in
India. This study conducted by Khemka, Ramrao and Hankey (2011)
evaluates the effects of integral yoga practices on these variables and also
the consistency of correlations observed between them. The study was a pre-
post intervention study. The variables were measured at the beginning and
the end of a one-month yoga course. There was no control group. The study
was carried out at Swami Vivekananda Yoga Anusandhana Samsthana (S-
VYASA) University, in its rural campus south of Bangalore. Based on health
criteria, 108 subjects were selected out of 198 volunteers to form the
experimental yoga group. Ages ranged from 17 to 63 years. The yogasanas
(postures), pranayama (breathing exercises), relaxation techniques,
meditation, chanting and lectures were the components of yoga intervention.
The variables measured were sustained attention, emotional intelligence -
EQ, general health - GHQ, guna personality - sattva, rajas and tamas.
Significant pre-post changes were found in all variables. Significant
correlations were found between the following pairs: The two sustained
attention variables; emotional intelligence and general health; GHQ and
tamas; sattva and tamas; and rajas and tamas. The study shows that there
were significant changes in all variables (P< 0.001) except in sattva. It also
confirms that EQ and general health variables correlate significantly with each
other and negatively with tamas. EQ and tamas form positive and negative
predictors of health respectively. Sattva correlates positively with EQ
suggesting that a sattvic personality indicates better self-control. This
suggests that, by improving guna personality, long-term yoga practice may
stabilize EQ.

The literature available so far revealed that studies of yoga for the
fencers’ personality, fitness and fencing skills is meager. This study, therefore
seems to be justified.

METHODOLOGY

Designing a Yoga Schedule

Along with fitness and skill abilities, a fencer must have a state of
mental stability and concentration. Therefore, research literature in this regard
will be consulted to design a proper yoga schedule exclusively for the fencers.
Sample

Fifty male (n=50), aged 14 to 18 years, national level fencing players from Maharashtra will be selected for this controlled experiment. All the 50 subject will be divided randomly into two groups viz., group –A (Experimental group) and group-B (Control group). Thus, each group will consist of 25 subjects.

Research Design

- Group-A i.e. experimental group will undergo a training program on selected yoga practices plus fencing practices and will participate in regular activity as per their daily schedule. The training in selected yoga practices and fencing will be implemented by qualified experts.

- Group-B i.e. control group has to undergo the fencing practices and participate in their regular activities.

The experiment will be conducted in three phases:

- Pre Test;
- Treatment / Training, and
- Post Test.

Pre Test

All the subjects of both the experimental and control groups will be pre-tested with the following variables:
Variables Selected for the Experiment

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Component</th>
<th>Test</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Performance related physical fitness components</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Agility</td>
<td>Shuttle run</td>
</tr>
<tr>
<td>2.</td>
<td>Balance</td>
<td>Standing Stork Test Blind</td>
</tr>
<tr>
<td>3.</td>
<td>coordination</td>
<td>Numbered circle test</td>
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<tr>
<td>4.</td>
<td>Flexibility</td>
<td>Sit &amp; reach</td>
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<tr>
<td>5.</td>
<td>Grip Strength</td>
<td>Grip dynamometer</td>
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<tr>
<td>6.</td>
<td>Speed</td>
<td>50 M dash</td>
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<tr>
<td></td>
<td>PSYCHOLOGICAL COMPONENTS</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Personality</td>
<td>16 PF test</td>
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<tr>
<td>2.</td>
<td>Concentration</td>
<td>BCE Inventory</td>
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<tr>
<td></td>
<td>FENCING SKILL</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Stance</td>
<td>Standard test</td>
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<tr>
<td>2.</td>
<td>Advance</td>
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<tr>
<td>3.</td>
<td>Retreat</td>
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<tr>
<td>4.</td>
<td>Lunge</td>
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</table>

Treatment / Training

After pretest is over, the subjects of experiment and control groups will undergo different training schedules as follows:

- **Group-A** *(Selected Yoga Practices plus Fencing practice)*;
- **Group-B** *(only Fencing practice)*;

The training will be imparted daily 1 hour in the evening, except Sundays and holidays. However, total duration of the experiment will be for a minimum period of 8 weeks.

Post Test

After completion of the training / treatment period of 8 weeks, the subjects of both the groups will be again tested (like pre-test) with the selected variables and data will be preserved and processed for statistical analysis.