

CHAPTER I

INTRODUCTION

The sport of fencing is fast and athletic, a far cry from the choreographed bouts one can see on film or on the stage. Instead of swinging from a chandelier or leaping from balconies, one could see two fencers performing an intense dance on a six-foot-by-59-foot strip. The movement is so fast the touches are scored electrically - more like Star Wars than Errol Flynn.

Fencing is a fun, exciting sport; simple and cheap to start and keeps both body and brain active. With 3 different weapons and a range of fun activities using foam and plastic swords, there is something for everyone and every age.

In the broadest possible sense, fencing is the art of armed combat involving cutting, stabbing, or bludgeoning weapons directly manipulated by hand and not shot or thrown. The weapons include swords, knives, pikes, bayonets, batons, clubs, and similar. In contemporary common usage, fencing' tends to refer specifically to European schools of swordsmanship and to the modern Olympic sports that has evolved out of them. Fencing is one of the four sports which have been featured at every modern Olympic Games.

1.1 HISTORY OF FENCING

The sword is one of the oldest of weapons and, as Egyptian frescoes circa 1200BC show, fencing is one of the oldest of sports.

The ability to demonstrate speed, skill and dexterity with a sword has always been considered an indication of manliness and throughout 17th and 18th century Europe duelling with rapiers settled 'matters of honour'.

The modern Olympic sport requires fencers to be of the fittest of athletes and have levels of skills which require many hours of dedicated training.

In learning the skills of attacking and defending with the Foil, Epee and Sabre fencers develop good co-ordination, balance and flexibility which makes fencing training an ideal means of keeping fit for all ages and abilities.

When fencing is offered as a holiday activity or in an attractive session there are always large numbers of youngsters who wish to emulate their story book heroes.

For those in wheelchairs fencing is a major sport in disabled competitions and Britain has won many medals at fencing in the Paralympic Games. Certain disabilities prove to be of little disadvantage at fencing and those who are unable to compete in other sports find that they can compete on equal terms with able bodied fencers. (Amberger, Johann Christoph -1999)

The sports of fencing are a sport of armed combat that is one of the remaining original events that was in the 1908 Olympic Games. Its three competitions are the Epee, Foil and Sabre which define the weapon used for defense and attack. The sport traces its origin to ancient times as fencing was an ancient form of combat in warfare. Today the competitive element has been distilled from its violent origins to create a sport of agility, speed and endurance. The goal of fencing remains the same as the goal of warfare-to best the other fencer-but without the trappings of violence.

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. (Amberger, Johann Christoph -1999)

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. The Greek and Roman civilizations favored short swords and light spears, and taught their warriors in schools called ludi. The collapse of the Roman civilization at around 476 A.D., however, brought the crude, heavy weapons of the barbarian invaders and signaled a regression of fencing through the dark ages. It was not until the beginnings of the Renaissance in the 14th century that light, fast weapons such as the rapier came back into use, primarily because gunpowder rendered heavy armor obsolete.

The use of armor during the middle ages made swordsmanship virtually obsolete. The broadsword was used against armor, but only as a crude hacking device requiring sheer strength rather than skill. The swords of that period were rather heavy, and cutting the opponent with the edge was emphasized. Further, since the sword was frequently a weapon of defense against thieves, tactics included wrestling holds and tricks designed to disarm or immobilize the opponent to set him up for the killing blow.

By making armor obsolete, the development of firearms ironically brought swordplay back into prominence during the 15th century. Soldiers once again had to acquire some skill with the sword, and fencing also emerged as a pastime for gentlemen. Fencing Masters organized guilds, which taught various moves to initiates while protecting them as trade secrets from outsiders.

The fifteenth century brought the beginnings of modern fencing. Spain had the first true fencers, and the first two fencing manuals were published there in 1471 and 1474, but swordplay guilds such as the Marxbruder from Germany began springing up all across Europe. About 1500 the Italians began extensive use of the Rapier. The right hand held the weapon while the left hand held a dagger (often called a *Main Gauche*) or buckler (a small shield), used for parrying blows. Italian Fencing Masters, such as Agrippa, who invented the four fencing positions (*prime*, *seconde*, *terce*, and *quarte*), and masters Grassi and Vigiani, who defined the lunge which was first illustrated by Capo Ferro, became very prolific in this time. The 16th century also brought a large increase in the popularity of dueling. More noblemen during this period were killed in dueling than in war. (Amberger, Johann Christoph - 1999)

The Queen Catherine de Médici of France had many Italian Fencing Masters come to France and develop fencing there. She was so successful that in 1567, her son, King Charles IX, officially recognized the French Fencing Academy, and awarded many hereditary titles to the new French fencing masters. These new masters were the first to classify and define fencing attacks and parries. In 1573 Henry de St. Didier was the first french fencing master to publish a treatise, and one of the first to advocate heavy use of the epee instead of the Rapier.

During the 17th century several major changes occurred in fencing. The "fleuret", or foil, was developed in France as a lighter training weapon for dueling. Right-of-way, a set of rules which made the game a series of alternating attacks and defense, became generally accepted. With right-of-way, duelists were unlikely to impale each other, as they did not both attack at the same time. This made fencing safer and reduced the number of casualties to dueling.

Fencing as an exercise based on speed and skill began when the longer, lighter rapier was developed in Italy during the 16th century. Because of the rapier's length, opponents had to fight at a distance and quick but controlled lunges, attacking the enemy with the point of the sword, replaced cruder hacking techniques. But the rapier wasn't a good defensive weapon, so the fencer often had to use his gauntleted left hand to parry his opponent's thrusts. (Amberger, Johann Christoph - 1999)

Under Louis XIV in France, a change in fashion led to a new kind of sword. The rapier simply didn't go well with brocaded jackets, breeches, and silk stockings, so French courtiers began wearing a shorter sword. The court sword, as it was known, turned out to be an excellent weapon for fencing because it was both lighter and stronger than the rapier, so it could be used for defense as well as offense, as a result, the modern one-handed fencing technique developed, with the left hand and arm used primarily for balance.

A special version of the court sword, the foil, was developed for practice. Meanwhile, another type of sword, the colichemarde, had been created for dueling. The blade had a triangular cross-section, with slightly concave sides to reduce weight without reducing strength. The colichemarde evolved into the small sword and that into the modern epee.

The third of the fencing weapons, the saber, was introduced into Europe in the late 18th century as an adaptation of the Turkish scimitar, used by the Hungarian cavalry. It was so effective that other armies began using it and another variation, the cutlass, became a standard naval weapon.

The saber was originally a very heavy, curved sword, but a lighter, more easily wielded weapon with only a slight bend was developed in Italy late in the 19th

century for dueling and fencing. The modern fencing weapon is straight, like the foil and epee, but it still has one cutting edge which can be used to make hits on an opponent.

In the 18th century the heavier weapon called the epee became the popular weapon for dueling. The sabre, a weapon descended from the Oriental scimitar, became the national weapon of Hungary, and while the Italians helped develop the sport immensely, the Hungarians stayed the true masters of the sabre.

In the year 1780 brought an extremely important development to fencing. The French Fencing Master La Boessiere invented the fencing mask, allowing a much safer bout. This sparked a lot of development in non-fatal technique and strategy.

Fencing first came to America in the 1860's - 1870's via immigrant French and Italian fencing masters, and the first American fencing school was founded in 1874. Fencing in America. There was fencing in the American Colonies, most notably in Virginia, where plantation owners carried on the genteel traditions of England. As part of its French heritage, New Orleans had a number of fencing masters at the time of the Louisiana Purchase in 1803. But modern fencing was brought to the United States by the German Turners in the late 1840s. While the Turners emphasized physical training through gymnastics, fencing was also part of their regimen. After the Civil War, many colleges and athletic clubs adopted fencing along with the rest of the Turner gymnastics program. (Amberger, Johann Christoph - 1999)

As a result, the U. S. had the first national governing body for the sport. The Amateur Athletic Union initiated national championships in 1888. However, many fencers were not happy with the AAU, so they formed the Amateur Fencers League of America (now the U. S. Fencing Association) in 1891. The AFLA began conducting

the national championships the following year. By this time fencing less resembled its violent roots and was now considered a non-harmful sport. Two other national governing bodies were founded shortly after the turn of the century: Great Britain's Amateur Fencing Association in 1902 and France's Fédération des Salles des Armes et Sociétés d'Escrime in 1906.

Dueling never completely died out until after the end of World War I, but the majority of fencers was not warriors. Men's Sabre and foil competitions were present in the first modern Olympic Games in 1896, and Men's epee joined in 1900. Women's foil joined the Olympics in 1924, but it was not until 1996 that Women's epee joined.

At the beginning of the 20th century French, Italians, and Hungarians were the masters of the sport, and thus it is not a surprise that the International Fencing Federation (FIE) was founded in France. The French, Italians and Hungarians maintained their grip on the sport until the 1950's, when eastern European countries such as the Soviet Union and Romania came to the fore. Their style emphasized speed and mobility, relying on touches that before would have gone undetected, but now were seen with the recently invented electric scoring machines. (Amberger, Johann Christoph - 1999)

Today cultural intermingling and competition has eliminated the national fencing styles; there are no longer French or Hungarian fencing techniques. Instead, the sport has become more reliant on individual technique. (Aylward -1956)

1.2 HISTORY OF FENCING IN OLYMPICS

Fencing its roots in ancient combat, fencing becomes an Olympic game since 1896 held at Athens (Greece). On 29th Nov. 1913 the F.I.E (Federation of

International d'Esgrime) was formed at a meeting held at automobile club in Paris which was attended by representatives from different countries.

Fencing is one of only four sports that have been on every modern Olympic program since 1896. The men's foil and saber events were on the 1896 program and the epee was added in 1900. But, because of major disagreements about the rules, France and Italy refused to compete in 1912. The Federation of International d'Esgrime, founded in 1913 to standardize rules, is the governing body for international fencing, including the Olympics.

The women's foil competition has been on the Olympic program since 1924. For many years, women fenced only with foils, but the epee was added to the Olympic program in 1996 and further sabre was included in the year 2000.

There are different sets of rules for the three weapons, reflecting the differences in technique that grew out of their historical background. In foils and epee, a touch can be made only with the point of the weapon. The entire body is a valid target for the epee, but in foils a touch can be scored only on a limited target area. In saber fencing, a hit may be made with the point, the cutting edge, or the forward third of the back edge.

Fencing is a difficult sport to judge, since it's necessary to determine, first, whether a hit was made and, second, which came first when the two fencers score hits almost simultaneously. The electrical epee was introduced at the 1936 to score hits automatically. Electrical scoring for the foil was added at the 1956 Olympics and for the saber at the 1992 Olympics. (Amberger, Johann Christoph - 1999)

1.3 HISTORY OF FENCING IN INDIA

The Asian games were held at Delhi (1951). After a gap of 23 years fencing was included in 7th Asian games which were held in Tehran (Iran) in 1974.

In 1974 fencing association of India (F.A.I) was founded in India. Shri. F.M.Khan Ex. M.P. was the first president of F.A.I. second president was Mr.K.C. Pant. Third was Mr.Kanti Choudhary. At present Mr.Durgadas Boro is the president of F.A.I. the first fencing championship was held in Lucknow in the year 1981 September. Fencing was introduced in the third national games at Pune (Maharashtra), which was held from 16th to 25th January 1994. Fencing was introduced in the junior national level first time at Rai (Haryana), held from 15th to 17th may 1992. Rajasthan fencing association in Jaipur organized the first sub junior national from 1st to 3rd August 1997. Tamilnadu fencing association in Chennai organized the first cadet national level championship from 17th to 20th November 2004. Maharashtra fencing association in Jalgaon organized the first fencing federation cup from 29th to 31st July 2007 and in Nashik organized the first fencing mini national fencing championship from 27th to 30th September 2010.

1.3.1 PROMOTION OF FENCING IN INDIA

Indian Association was founded in 1974, recognized by Government in 1997 and affiliated to the Indian Olympic Association, Asian Fencing Confederation, Commonwealth Fencing Federation and Federation International D'Esime (FIE). There are six individual and six team events in three different weapons used in Fencing – Epee, Foil and Sabre. The total number of medals is 48, next only to Aquatics and Athletics.

Sports Authority of India adopted this game under its “Special Area Games Scheme” from 1989 to 1996. One German and two Russian coaches were brought by Sports Authority of India to reinforce the SAG Scheme. During this period the trainees had participated in the World Junior & Cadet Championship in 1995 and the senior team participated in training-cum-competition at Belarus and also in an International meet at Tehran in 1996, where they secured a bronze medal in each tournament.

Owing to intensive training in the SAG Scheme, all trainees became National champions in their respective events, later. With the closure of the SAG Scheme by SAI in 1996, the game became dormant. The Association had been holding National competitions in Sub-Junior (1999), Cadet (2004), Junior (1992) and Senior (1986) categories, both for boys/men and girls/women.

Prior to participation in international events, the Association with the assistance of SAI had been conducting the National Coaching Camp of a limited duration at different venues. Streamlining the functioning of the affiliated units and regulated the pattern and conduct of competition in National Championships. Obtained the services of foreign coach, for a period of ten months each, in 2002 and 2004 to impart training to National teams and advise SAI on improvements to be effected.

Despite lack of equipment, infrastructure and sustained and proper training, the National ranking fencers who had participated in international competitions in the recent past, have had modest performance. Notwithstanding the constraint of funds and lack of effective long term training and non-availability of competent and qualified coaches of international caliber and lack of international exposure, the

juniors and seniors who had participated in international events are gradually ascending the ranking position, both in international and regional events.

1.4 DIFFERENT TYPES OF FENCING

Fencing, which is also known as modern fencing to distinguish it from historical fencing, is a family of combat sports using bladed weapons. It is also known as french sword fighting or french sword fencing. It is usually practiced with the help of a sword or mini-blade. Fencing is one of four sports which have been featured at every one of the modern Olympic Games. The sport of fencing is divided into three weapons (Evangelista, Nick 1996):

Foil—a light thrusting weapon that targets the torso, including the back, but not the arms. Touches are scored only with the tip; hits with the side of the blade do not count, and do not halt the action. Touches that land outside of the target area (off-target) stop the action, and are not scored. Only a single hit can be scored by either fencer at one time. If both fencers hit at the same time, the referee uses the rules of right of *way* to determine which fencer gets the point.

Sabre—a light cutting and thrusting weapon that targets the entire body above the waist, excluding the off hand. Hits with the edges of the blade as well as the tip are valid. As in foil, touches which land outside of the target area are not scored. However, unlike foil, these off-target touches do not stop the action, and the fencing continues. In the case of both fencers landing a scoring touch, the referee determines which fencer receives the point for the action, again through the use of "right of way".

Epee—a heavier thrusting weapon that targets the entire body. All hits must be with the tip and not the sides of the blade. Touches hit by the side of the blade do not halt the action. Unlike foil, epee and sabre, does not use right of way, and allows

simultaneous hits by both fencers. However, if the score is tied at the last point and a double touch is scored, nobody is awarded the point.(Evangelista, Nick - 1996)

1.4.1 SKILLS IN FENCING

Foil and sabre (but not epee) are subject to a special set of rules concerning what happens when both fencers land a hit at the same time. The referee may award the point to one of the fencers or neither, but never both. In broad terms, the referee's job is to decide which fencer had tactical initiative; if he cannot decide, no point is given. An action which is deemed as having the necessary initiative is said to have priority or right of way.

The details of these rules are notoriously convoluted, but, in essence, there are four ways to establish right of way:

1. Be the first to launch a continuous and successful attack (i.e. the first to begin extending the arm while threatening the opponent with his weapon and closing distance).
2. Be the last to defend successfully (i.e. to block or divert an opponent's offensive action).
3. Upset the opponents control of the blade (for example, by beating it aside).
4. Establish a point in line before the opponent begins his attack (i.e. extend the arm and point the sword forwards, so that the opponent impales himself when closing distance).

And, conversely, there are also four common ways to lose right of way:

1. Miss.
2. Have your offensive action parried.
3. Allow your opponent to upset your control of the weapon.

4. Break the flow of an offensive action by retracting the arm mid way through (this is seen as a removal of threat and, therefore, a loss of initiative).

These rules have existed, in some form, since 17th century. They were originally developed in order to discourage foolhardy tactics which neglect defence and are likely to result in simultaneous hits (an undesirable result in a duel). Instead they encourage a "conversation of the blades" with initiative passing back and forth between the fencers, until one of them manages to find a hole in the other's defence. Last-ditch renewals and counter-attacks in situations where you cannot prevent yourself from being hit are not counted, because the main goal of the game was, originally, to practice keeping yourself alive. Needless to say, right of way rules are only relevant when both fencers hit. In practice, there are many viable tactical uses for counter-attacks and renewals, which rely on making your opponent, miss through clever management of timing and distance. (Alaux, Michel - 1975)

In foil, right of way rules apply regardless of whether either of the hits is on or off-target. If the action which had priority is off-target, no point is given (even if the opponent's action is on-target). In sabre, off-target hits do not register, so no equivalent provisions are necessary.

In epee, there are no right of way rules. When both fencers hit, both are given a point, unless they are drawn and fighting for the last point in the bout, in which case they have to keep fighting, until somebody manages to get a clean hit.

1.4.2 FLETCH

In a fletch, a fencer transfers his weight onto his front foot and starts to extend the arm. The rear leg initiates the attack, but the ball of the leading foot provides the explosive impulse that is needed to drive the fencer toward the opponent. Continuing

to bring the weapon, arm, and front shoulder forward, he picks up his back foot, crossing his front leg, and landing it in front of the other foot - as if taking an exaggerated walking stride. It is at this point, when the back foot lands and just after that arm has become fully extended, that the hit should be made. In foil, the attack is considered over when the back foot lands, and the opponent can seize Right of Way by initiating an attack. (Alaux, Michel - 1975)

After attempting the hit, the fencer continues to move forward, running past his opponent, to avoid the riposte if he was parried, or a counter attack. If the fencer moves past as quickly as possible the opponent generally only has one chance to hit the fletching fencer as he/she passes. Rules prevent body contact with the opponent in foil. Infraction of the rule may result in a warning, awarding a touch to the opponent, and/or expulsion from the competition. In epee, contact merely results in a stopping of play without penalty, unless it was done with jostling, brutality, or to avoid being hit.

The fletch involves speed and an element of surprise. The fletch is absolutely not a charge down the piste at an opponent at distance. The fletch utilizes timing, not distance, so the distance shouldn't be greater than a step-lunge. The other forms of fencing are detailed below:

1.4.3 FOIL

The foil is a light and flexible weapon, originally developed in the mid 17th century as a training weapon for the small sword (a light one-hundred sword designed almost exclusively for thrusting). The target area is restricted to the torso. Hits can be scored only by hitting the valid target surface with the point of the weapon in such a manner as would have caused a puncture wound, had the weapon been sharp. A

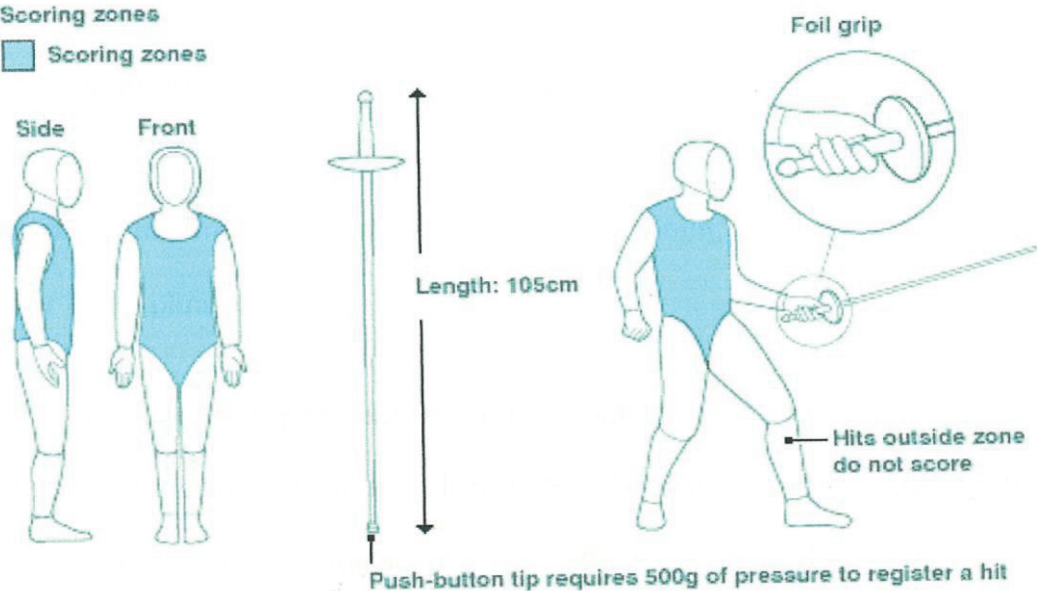
touch on an off-target area stops the bout but does not score a point. There are right of way or priority rules, whose basic idea is that, the first person to create a viable threat or the last person to defend successfully receives a “right” to hit. If two hits arrive more or less simultaneously, only the fencer who had the ‘right of way’ receives a point. If priority cannot be assigned unambiguously no points are awarded. The original idea behind the foil rules was to encourage the fencers to defend and attack vital areas, and to fight in a methodical way with initiative passing back and forth between the combatants and thus minimizing the risk of a double death. (Evangelista, Nick - 1996)

In modern competitive fencing ‘electric’ weapons are used. The foil weapon weight which is ready for use must be less than 500gm. These have a Push-button on the point of the blade, which allows hits to be registered by the electronic scoring apparatus. In order to register, the button must be depressed with a force of at least 4.90 Newton’s (500 grams-force) for at least 15 milliseconds. Fencers wear conductive (lame) jackets covering their target area. Which allow the scoring apparatus to differentiate between on- and off – target hits. (Alaux, Michel - 1975)

FENCING: FOIL

Scoring zones

■ Scoring zones



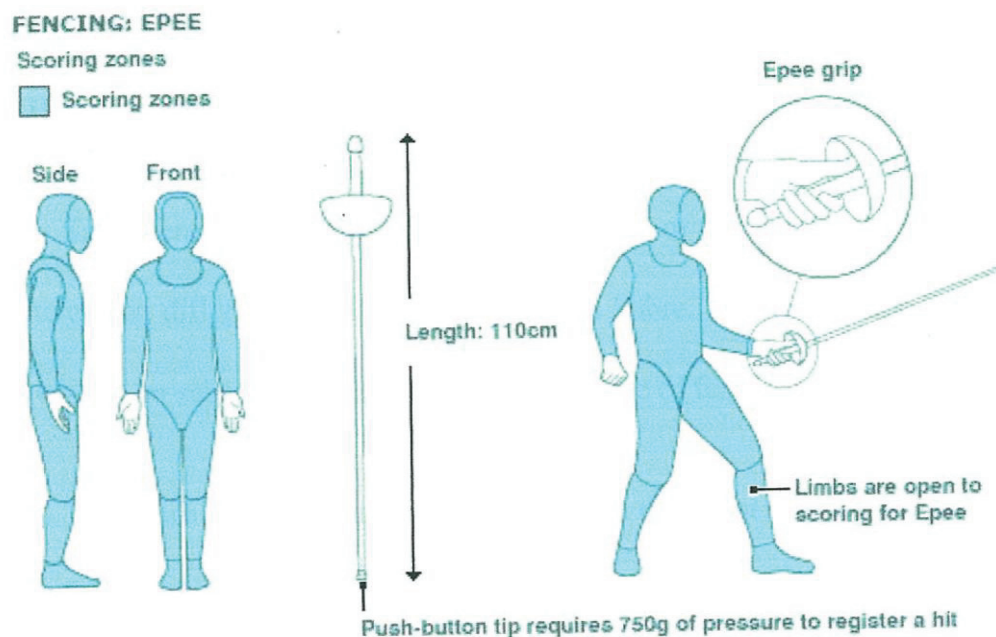
1.4.4 EPEE

Epee, as the sporting weapon we know today, was invented in the second half of the 19th century by a group of French students, who felt that the conventions of foil are too restrictive, and the weapon itself too light; they wanted an experience closer to that of an actual duel. At the point of its conception, the epee was, essentially, an exact copy of a small sword but without the needle-sharp point. Instead, the blades terminated in a point direct, a three-pronged contraption, which would snag on the clothing without penetrating the flesh.

Like the foil, the epee is a thrusting weapon, to score a valid hit; the fencer must fix the point of his weapon on his opponent's target. However, the target area covers the entire body, and, there are no rules regarding who can hit when (unlike in foil and sabre, where we have priority rules). In the event of both fencers making a touch within 40 milliseconds of each other. Both are awarded a point (a double hit). Except in modern pentathlon one-hit epee, where neither fencer receives a point. Otherwise, the first to hit always receives the point, regardless of what happened earlier in the phrase.

The 'electric' epee, used in modern competitive fencing, terminates in a push button, similar to the one on the 'electric' foil. Total weight of the epee weapon is less than 770gm. In order for the scoring apparatus to register a hit, it must arrive with a force of at least 7.35 Newton's (750 grams-force) (a higher threshold than the foil's 4.9 Newton's), and the push-button must remain fully depressed for 1 millisecond. All hits opponent's weapon, in which case they do not register at all. At large events, grounded conductive piste are often used in order to prevent the registration of hits against the floor at smaller events and in club fencing. It is

generally the responsibility of the referee to watch out for floor hits. These often happen by accident, when an epeeist tries to hit the opponent's foot and misses. In such cases, they are simply ignored. However, deliberate hits against the floor are treated as "dishonest fencing," and penalized accordingly (Evangelista, Nick - 1996).



1.4.5 SABRE

Valid target at sabre (everything above the waist, bar the palms of the hands and the back of the head). Sabre is the 'cutting' weapon: points may be scored with edges and surfaced of the blade, as well as the point. Although the current design with a light and flexible blade (marginally stiffer than a foil blade) appeared around the turn of the nineteenth century and twentieth century, similar sporting weapons with more substantial blades had been used throughout the Victorian era.

There is some debate as to whether the modern fencing sabre is descended from the cavalry sabres of Turkic origin (which became popular in Central and Western Europe around the time of Napoleonic wars) or one of Europe's indigenous

edged dueling weapons, such as the cutting rapier, in practice, it is likely to be hybrid of the two. Most of the conventions and vocabulary of modern sabre fencing were developed by late nineteenth century and early twentieth century masters from Italy and Hungary. (Evangelista, Nick - 2000)

Sabre fencing also grew based on the work of Michel Starzewski who wrote on the eleven different attack positions used in Sabre. The 1830 work was one of the first written on sabre fencing helped make this type of fencing grow significantly.

The sabre target covers everything above the waist, except the hands and the back of the head. Today, any contact between any part of the blade and any part of the target counts as a valid touch. This was not always the case, and earlier conventions stipulated that a valid touch must be made with either the point or one of the cutting edges, and must arrive with sufficient force to have caused a palpable wound, had the weapon been sharp. These requirements had to be abandoned, because of technical difficulties, shortly after electronic scoring was introduced into sabre fencing in late 1980s.

Like foil, sabre is subject to right of way rules, but there are some differences in the precise definition of what constitutes a correctly executed attack and parry. These differences, together with a much greater scoring surface (the whole of the blade, rather than the point alone), make sabre parries more difficult to execute effectively. As a result, sabre tactics rely much more heavily on footwork with blade contact being kept to a minimum. The total weight of the sabre ready for use must be less than 500gm. (Evangelista, Nick - 2000).

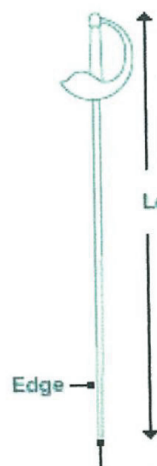
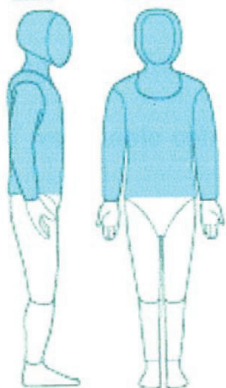
FENCING: SABRE

Scoring zones

■ Scoring zones

Side

Front



Length: 105cm

Sabre grip



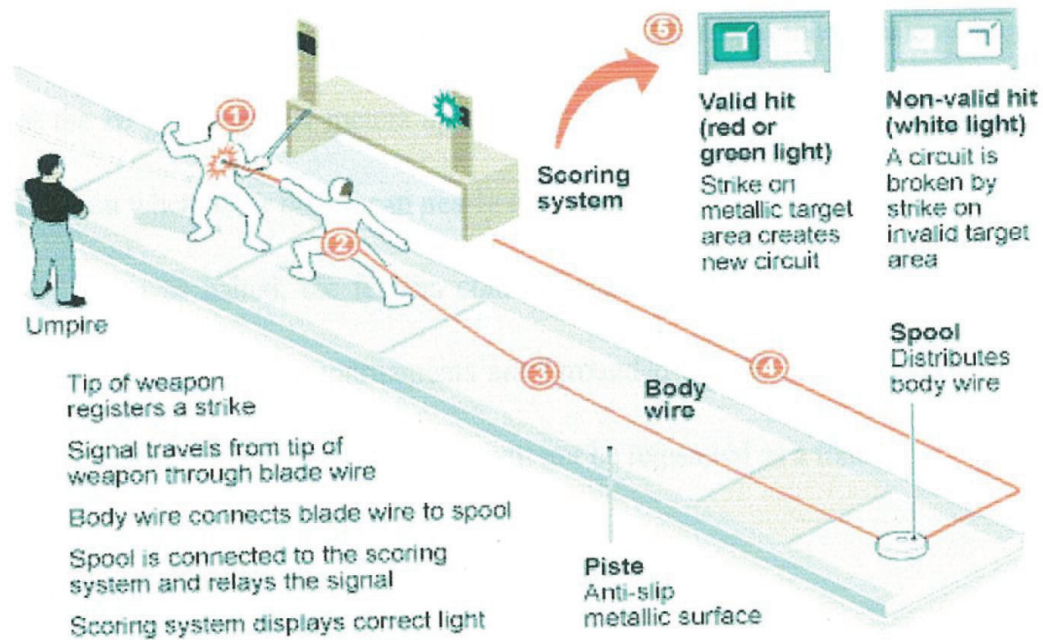
Points can be scored using the edge as well as the tip

1.4.6 SCORING

Prior to the introduction of electronic scoring equipment, a director (formerly called the president of jury) was assisted by four judges. Two judges were positioned behind each fencer, one on each side of the strip. The judges watched the fencer opposite to see if he was hit. This system is sometimes called “dry” fencing (USA) or “stream” (United Kingdom, Australia) fencing.

Electronic scoring is used in all major national and international, and most local, competitions. At Olympic level, it was first introduced to epee in 1936, to foil in 1956, and to sabre in 1988. The central unit of the scoring system is commonly known as “the box.” In the simplest version both fencers’ weapons are connected to the box via long retractable cable. The box normally carries a set of lights to signal when a touch has been made. (larger peripheral lights are also often used.) in foil and sabre, because of the need to distinguish on target ones, special conductive clothing and wires must be worn. This includes a lame, (a jacket of conducting cloth) for both

weapons, a body cord to connect the weapon to the system, a reel of retractable cable that connects to the scoring box and in the case of sabre, a conducting mask and cuff (manchette) as the head and arms are valid target areas. (Evangelista, Nick - 2000)



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1.4.7 PISTE (Play Field Area)

In modern fencing, the piste or strip is the playing area. Regulations require the piste to be 14 meters long and between 1.5 to 2 meters wide; the last two meters on each end are hash-marked, so as to warn a fencer before he/she backs off the end of the strip. There is also a 1.5 meter runoff to allow fencers who fletch. The piste is also marked at the center and at the “*en garde*” lines, located to meters either side of the center line.

Retreating off the end the strip with both feet gets a touch against. Going off the side of the strip with one foot halts the fencing action. The fencers then return to the piste, with the each fencer able to fully extend their arm and blade without either

fencer's point past where the fencer left the piste. Going off the side with both feet gets a penalty of the loss of one meter, and if this results in the offender going off the end of the strip, a touch is awarded to his opponent. After each touch, fencers begin again at the en grade line and if these lines are not available, roughly at a position where their blades can nearly touch when fully extended. If no touch is scored but plays was halted. The fencer comes to en grade position when they stopped. Most piste at fencing tournament are "grounded" to the scoring box, thus any hits that a fencer makes against the piste will not be registered as a touch. (Evangelista, Nick - 2000)

1.5 STRENGTH TRAINING

Strength training is a type of physical exercise specializing in the use of resistance to induce muscular contraction which builds the strength, anaerobic endurance, and size of skeletal muscles. When properly performed, strength training can provide significant functional benefits and improvement in overall health and well-being, including increased bone, muscle, tendon and ligament strength and toughness, improved joint function, reduced potential for injury, increased bone density, increased metabolism, improved cardiac function, and elevated high-density lipoprotein HDL ("good") cholesterol. Training commonly uses the technique of progressively increasing the force output of the muscle through incremental weight increases and uses a variety of exercises and types of equipment to target specific muscle groups. Strength training is primarily an anaerobic activity, although some proponents have adapted it to provide the benefits of aerobic exercise through circuit training. (De Mello Meirelles, Gomes, - 2004)

Sports where strength training is central are bodybuilding, weightlifting, power lifting, strongman, highland games, shot put, discus throw, and javelin throw. Many other sports use strength training as part of their training regimen, notably American football, wrestling, track and field, rowing, lacrosse, basketball, pole dancing (or pole fitness), hockey and football. Strength training for other sports and physical activities is becoming increasingly popular.

1.5.1 Progressive Overload

In one common method, weight training uses the principle of progressive overload, in which the muscles are overloaded by attempting to lift at least as much weight as they are capable. They respond by growing larger and stronger. This procedure is repeated with progressively heavier weights as the practitioner gains strength and endurance.(Brooks, Fahey, & White -1996)

However, performing exercises at the absolute limit of one's strength (known as one rep max lifts) is considered too risky for all but the most experienced practitioners. Moreover, most individuals wish to develop a combination of strength, endurance and muscle size. One repetition sets are not well suited to these aims. Practitioners therefore lift lighter (sub-maximal) weights, with more repetitions, to fatigue the muscle and all fibers within that muscle as required by the progressive overload principle.

Commonly, each exercise is continued to the point of momentary muscular failure. Contrary to widespread belief, this is not the point at which the individual thinks they cannot complete any more repetitions, but rather the first repetition that fails due to inadequate muscular strength. Training to failure is a controversial topic with some advocating training to failure on all sets while others believe that this will

lead to overtraining, and suggest training to failure only on the last set of an exercise. Some practitioners recommend finishing a set of repetitions just before the point of failure; e.g. if you can do a maximum of 12 reps with a given weight, perform only 11. Adrenaline and other hormones may promote additional intensity by stimulating the body to lift additional weight (as well as the neuro-muscular stimulations that happen when in “fight-or-flight” mode, as the body activates more muscle fibers), so getting "psyched up" before a workout can increase the maximum weight lifted (Kraemer, William, Zatsiorsky, Vladimir - 2006).

Weight training can be a very effective form of strength training because exercises can be chosen, and weights precisely adjusted, to safely exhaust each individual muscle group after the specific numbers of sets and repetitions that have been found to be the most effective for the individual. Other strength training exercises lack the flexibility and precision that weights offer.

1.5.2 Split Training

Split training involves working no more than three muscle groups or body parts per day, instead spreading the training of specific body parts throughout a training cycle of several days. It is commonly used by more advanced practitioners due to the logistics involved in training all muscle groups maximally. Training all the muscles in the body individually through their full range of motion in a single day are generally not considered possible due to caloric and time constraints. Split training involves fully exhausting individual muscle groups during a workout, then allowing several days for the muscle to fully recover. Muscles are worked roughly twice per week and allowed roughly 72 hours to recover. Recovery of certain muscle groups is usually achieved on days while training other groups, that is, a 7 day week can consist

of a practitioner training trapezius, side shoulders and upper shoulders to exhaustion on one day, the following day the arms to exhaustion, the day after that the rear, front shoulders and back, the day after that the chest. In this way all mentioned muscle groups are allowed the necessary recovery. (Kraemer, William, Zatsiorsky, Vladimir - 2006).

1.5.3 Intensity, Volume, And Frequency

Three important variables of strength training are intensity, volume, and frequency. Intensity refers to the amount of work required to achieve the activity, and is proportional to the mass of the weights being lifted. Volume refers to the number of muscles worked, exercises, sets and reps during a single session. Frequency refers to how many training sessions are performed per week.

These variables are important because they are all mutually conflicting, as the muscle only has so much strength and endurance, and takes time to recover due to microtrauma. Increasing one by any significant amount necessitates the decrease of the other two, e.g. increasing weight means a reduction of reps, and will require more recovery time and therefore fewer workouts per week. Trying to push too much intensity, volume and frequency will result in overtraining, and eventually lead to injury and other health issues such as chronic soreness and general lethargy, illness or even acute trauma such as avulsion fractures. A high-medium-low formula can be used to avoid overtraining, with intensity, volume, or frequency being high, one of the others being medium, and the other being low. A common training strategy is to set the volume and frequency the same each week (e.g. training 3 times per week, with 2 sets of 12 reps each workout), and steadily increase the intensity (weight) on a weekly basis. However, to maximize progress to specific goals, individual programs may

require different manipulations, such as decreasing the weight, and increase volume or frequency.(Campos, Luecke, Wendeln, et al. - 2002)

Making program alterations on a daily basis (daily undulating periodization) seems to be more efficient in eliciting strength gains than doing so every 4 weeks (linear periodization), but for beginners there are no differences between different periodization models.(Buford, Rossi, Smith, Warren - 2007)

1.5.4 Periodization

There are many complicated definitions for periodization, but the term simply means the division of the overall training program into periods which accomplish different goals. Periodization is the modulating of volume, intensity, and frequency over time, to both stimulate gains and allow recovery.

In some programs for example; volume is decreased during a training cycle while intensity is increased. In this template, a lifter would begin a training cycle with a higher rep range than he will finish with.

1.6 BENEFITS OF STRENGTH TRAINING FOR FENCERS

Specifically, training heavy with basic weightlifting exercises like half squats and bench press will benefit the fighter in modern fencing, historical fencing, martial arts and combat sports. This is why fencing training is not just a bunch of free fencing. Different kinds of drills allow the fencer to focus on footwork, blade work, timing, distance etc. The same must be true of the physical conditioning side of training. We can focus on anaerobic conditioning, recovery, acceleration, power and so on.

The movement pattern for the half squat and press are not specific to fencing actions. However, they are specific to grappling actions and historical fencing finds

it's roots in grappling. But the movement pattern is only one aspect of specificity. The movements are bilateral, well-balanced and stable. While fencing actions usually involve powering off of one leg and the arm motion is either unilateral or the arms move differently from each other.

The benefit of these basic exercises is that they allow maximum force production. By taking instability out of the exercise one is not as limited by the failure point of the stabilizing muscles. Force is the determinant of acceleration in our muscles, so increasing force production increases acceleration. Maximizing force is the specificity of basic strength because it will maximize acceleration.

Acceleration is of supreme importance in historical fencing - just as it is with any other sport. Acceleration will put attacks on target faster. Acceleration put the parries in place faster. Acceleration will move one around faster - retreats, advances and voids will all be more effective because of greater acceleration.

Of course, it is also the case that exercises with greater specificity in movement pattern and requiring more stability are a necessary part of a complete program. This is why basic half squats in the form of varied intensities of strength training should be supplemented with exercises like: split squats, rear foot elevated (RFE) split squats, single-leg squats, lunges and lateral variants. Similar kinds of variations exist for bench press, dead lift, rows and pull-ups, but those are a topic for another day.

Stronger legs from half squats will produce more force that can be transmitted to the arms through a strong core. And stronger chest & arms from bench presses will supplement good structure to transfer power to the target. When a cut is parried, the defender must absorb all the force that the attacker can direct into their weapon, if not

the parry will fail and my collapse entirely. As the opponent's sword hits the defender's sword they must essentially perform an isometric press outwards against the force of the attack. That upper-body press must be accompanied by pushing back with the anterior core, driven by the legs pushing into the ground. All of this requires both structure and strength.

Furthermore, basic strength training exercises will develop good structure. The best results with these exercises will come from developing good structure as well as basic strength. Additionally, the core is well engaged with these exercises and contributes to the amount of weight that can be lifted.

1.7 REASONS FOR SELECTION OF TOPIC AND VARIABLES

Training must begin with foundational exercises. Just as fencing training begins with basic footwork exercises, so strength training must start with basic exercises. And just as footwork exercises never stop in fencing training so must basic strength training always form the core of the strength conditioning programme.

Basic strength training forms the foundation for success, joint health and more advanced training. It insures that every link in the chain is made strong, instead of focusing on only a few. Furthermore it has basic health benefits. There is every reason to include strength training as a core component of a complete program.

Fencing can put significant strain on the body and a variety of training injuries are possible. Most non-impact injuries can be prevented or made less likely with strength training. Furthermore, full recovery from injury requires rebuilding the strength of the injured joint.

When it was suggested for strength training for fencing it is frequently heard, "speed is more important" or even, "it's not about strength". A lot of this objection

comes from a misapplication of the concept of specificity. Specificity is not just one thing - there are different components to be specific about. And different aspects of training will focus on these varied areas.

To build up our various sport-specific attributes we must do so upon a foundation of basic strength. This allows us to produce the best results. The maximal force production from strength training is refined to sport-specific actions with additional training and varied exercises. Joint strength supports the development of maximum power and agility, while minimizing the chance of injury. It was the interest of the investigator to find out whether different the intensities of strength training influences differentially among state level men fencers' selected physical, physiological, psychological and performance variables.

1.8 OBJECTIVE OF THE STUDY

The objectives of this study are as follows:

1. To measure status analysis of the state level men fencers' physical fitness variables such as, muscular strength and leg explosive strength; physiological variables such as aerobic capacity and anaerobic power; psychological variables, such as, anxiety and aggression and performance variables such as, fletch and lunge..
2. To formulate varied intensities of strength training programmes for the benefit of state level men fencers to develop their physical, physiological, psychological and performance levels.
3. To intervene the state level men fencers with varied intensities of strength training programmes, namely, low, medium and high intensity strength training.

4. To find out the effect of varied intensities of strength training on selected state level men fencers on selected physical, physiological, psychological and performance variables.

1.9 STATEMENT OF THE PROBLEM

The purpose of this study was to find out the effects of varied intensities of strength training on selected physical fitness variables, such as, muscular strength and leg explosive strength; physiological variables such as aerobic capacity and anaerobic power; psychological variables, such as, anxiety and aggression and performance variables such as, fletch and lunge among state level men fencers.

1.10 HYPOTHESIS

The following were hypothesized for the purpose of this study:

The following were hypothesized for the purpose of this study:

1. It was hypothesized that HIST would significantly improve selected physical fitness variables, muscular strength and leg explosive strength than the LIST, MIST and control group of the state level men fencers.
2. It was hypothesized that HIST group would significantly improve selected physiological variables, aerobic capacity and anaerobic power than the LIST, MIST and control group of the state level men fencers.
3. It was hypothesized that HIST group would significantly alter the selected psychological variables, anxiety and aggression than the MIST, LIST and control group of the state level men fencers.
4. It was hypothesized that HIST group would significantly improve selected performance variables, fletch and lunge than the MIST, LIST and control group of the state level men fencers.

5. It was hypothesized that there would be no significant differences on selected physical, physiological, psychological and performance variables in control group.

1.11 SIGNIFICANCE OF THE STUDY

The investigation would be significant in the following aspects:

1. The study was significant in assessing selected physical, physiological, psychological and performance levels of state level men fencers.
2. The study was significant in formulating different intensities of strength training for the benefit of fencers.
3. The findings of this study would throw more light on the influence of different intensities of strength training on selected physical, physiological, psychological and performance variables of state level men fencers.
4. If the hypothesis of this study was proved positive, it will be helpful in selecting state level men fencers and for improving selected physical, physiological and psychological variables and resultant influence on performance variables.
5. The study may serve as a contributory one in the strength training domain, especially for fencers.
6. The findings of this study would be helpful for coaches, physical educationists and fencers to suitably adapt the strength training protocols suggested in this study.
7. This study may also create interest among other researches to find the values of different intensities of strength training on selected physical, physiological, psychological and performance variables.

1.12 LIMITATIONS

This research was limited in the following respects.

1. The day today activities, rest period, food habits and life style could not be controlled.
2. The researcher could not control the humidity, temperature, and other environmental conditions, during collection of data from the subjects.
3. No special motivation technique was given to the subjects during training and testing period.

1.13 DELIMITATIONS

This study was delimited in the following aspects

1. The subjects selected for this study was only 60 and they were state level men fencers.
2. The age of the subjects was between 18 to 25 years.
3. The study was conducted by independent variable with low intensity of 35 – 45%, medium intensity of 45 - 55% and high intensity of 55 - 65%.
4. The following dependent variables were selected for this study.

Physical Fitness Variables

1. Muscular Strength
2. Leg Explosive Strength

Physiological Variables

1. Aerobic Capacity
2. Anaerobic Power

Psychological Variables

1. Anxiety

2. Aggression

Performance Variables

1. Fletch
2. Lunge
5. The performance was assessed only by the panel of three experts.
6. The previous experience and physical status was not considered.

1.14 DEFINITION OF TERMS

The important terms used in the study are defined below.

1.14.1 Muscular Strength

Muscular strength is defined as the maximum amount of force that a muscle can exert against some form of resistance in a single effort.

1.14.2 Leg Explosive Strength

Explosive power is defined as the ability to keep the muscle fibers turned on for an extended period of time against a resistance.

Leg explosive power is the ability to release maximum muscular force in the shortest time as in executing a standing broad jump. (Baumgartner, 1987).

1.14.3 Aerobic Capacity

Aerobic capacity is the highest amount of oxygen consumed during maximal exercise in activities that use the large muscle groups in the legs or arms and legs combined.

1.14.4 Anaerobic Power

Anaerobic power is defined as the maximal amount of adenosine triphosphate resynthesized via anaerobic metabolism (by the whole organism) during a specific mode of short-duration maximal exercise.

1.14.5 Anxiety

Anxiety is defined as a feeling of worry, nervousness, or unease about something with an uncertain outcome.

1.14.6 Aggression

Aggression is defined as feelings of anger or antipathy resulting in hostile or violent behaviour; readiness to attack or confront.

1.14.7 Fletch

The term fleche is a French term meaning "arrow," referring to the surprising style of the attack. This technique used in fencing is considered as fletch. (Castle, Egerton (2005)).

1.14.8 Lunge

The lunge is the fundamental footwork technique used with all three fencing weapons: foil, epee and sabre. It is common to all contemporary fencing styles.

The lunge is executed by kicking forward with the front foot, and pushing the body forward with the back leg. It can be used in combination with different blade work to deliver an offensive action such as an attack.(Castle, Egerton (2005)).