**Course Outline**

**Course Title:** Apparatus Gymnastic

**Course code:** SpSc 2092

**Course Instructors:** Amanu Eba

**Credit hours:** 3

**Prerequisites courses: Basic Gymnastic**

**Course Description:** these courses deal with the concept of apparatus gymnastics, historical background, classification, values and benefits of gymnastic activities, and the practical part includes general preparation of gymnastics, conditioning exercises calisthenics and floor exercise. The practical parts of the method of instruction gymnastics, spotting, safety, and performing gymnastics activities by using pommel horse, horse vault, parallel bars, horizontal bars, uneven bars, balanced beam, Familiarize officiating gymnastics competitions program.

**Course Objectives:** At the end of this course the student will be able to:

 Analyze the techniques of apparatus gymnastics

• Demonstrate various gymnastics activities using apparatus.

• Differentiate the methods of teaching apparatus gymnastics.

• Know the rules of judging, and spotting

 Develop basic gymnastic skills by focusing on free gymnastic.

**Chapter 1: Basic Concepts of Gymnastics**

1.1. Historical development of gymnastics.

1.2. The subject matter, values and purpose of gymnastics.

1.3. Methods of instruction in gymnastics.

1.4. A factor that affects in gymnastics

1.5. Safety measure and support

**Chapter 2: Practical preparation of Gymnastics**

2.1. General Preparation

2.2. Conditioning exercise for Gymnastics

**Chapter 3: Calisthenics Exercise**

3.1. History of calisthenics Exercise

3.2. Calisthenics Exercise

**Chapter 4: Techniques of training in apparatus gymnastics**

4.1. Pommel horse

4.2. History and foundation of pommel horse

4.3. Horse Vault

4.4. History and foundation of horse Vault

4.5. Parallel bars, horizontal bars, uneven bars

4.6. History and foundation of Parallel bars, horizontal bars, uneven bars

4.4. Balance beam

4.5. History and foundation of balance beam

**Chapter: Introduction to rules and regulation of gymnastic competition**

**Assessment Methods:** Quizzes (20%), Practical Exam (50%) and Final exam (30%).

**References:**

1. Aronson, Richard, Ed, 1970. The Art and science of Judging men’s Gymnastics. Lowell mass Lowell Technical Institute.

2. Bowers, Carolyn *et al*, 1972. Judging and coaching women’s Gymnastics, Palo Alto, Calif: National Press.

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5. Laporter R., Renner G., (1938). Tumblers Manual prentice- Hall, Inc., Englewood cliffs, New Jersey.

6. Loken, Newton C., and Willoughby, Robert J., (1977). The complete book of

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**Chapter 1: Basic Concepts of Gymnastics**

Basic Gymnastics is the fundamental movement skills which everyone does every day. It contains a variety of movements to contribute the wholesome developments of the participants.

**1.1. Historical development of gymnastics.**

Gymnastics is one of the oldest components of physical activity. Gymnastic activities focus on the body. They are concerned with acquiring control, coordination and flexibility in the use of the body in increasing challenging situations and with developing strength especially of the upper body and maintaining flexibility. These activities are based on natural actions such as leaping, balancing, inverting, rolling and swinging.

 **History of Gymnastics at early age**

Perhaps the Chinese were the first people to develop activities that resembled gymnastics. Records indicate that two systems of training were employed, **military** and **medical**. Histories of Egypt, Japan, Persia and India mention physical exercises in connection with preparation for war. In fact, Egypt has left tangible proof, in the form of pictures of pyramids and balancing of the art of gymnastics as it was practiced 2600 B.C.

**Gymnastics at Early Greeks**

The early Greeks, however, gave glory to physical training in general and to gymnastics in particular. The word "**gymnastics**," meaning "**naked art**," comes from the early Greeks. So much importance was attached to gymnastics that the gymnasium, an outdoor meeting place for athletic contests, was the seat of Greek intellectual development. All round development of the individual was the goal sought, a perfectly trained, hardened, disciplined body, a citizen and a warrior worthy of highest Greek standards.

Exercises in Greek gymnastics were based on natural movements and included running, throwing, wrestling, boxing, climbing, jumping and work with weights. Weight lifting and jumping with weights were popular activities as well as others involving the use of the sling, the

spear, and the bow and arrow. Dancing and games also were part of the program. The Greeks worked with apparatus rather than upon it.

**Gymnastics at Early Romans**

The early Romans, having seen the favorable effect of Greek gymnastics, introduced rigid physical training into their military program. Among other apparatus, they made use of a wooden horse upon which to practice mounting and dismounting. The activities, executed while holding a drawn sword or lance, left no doubt as to the purpose of training. The words of the Romans, conquerors and warriors that they were, give a clear picture of the motive behind the activity, "It appears to be playing, but it is for the Fatherland."

 **History of gymnastics at middle ages**

The decade of both the Greek and Roman civilizations was followed by a long period of asceticism when strenuous physical activity for the common people was discouraged.

Throughout the middle ages, the knights, representing the warrior class, were probably the only group participating in organized physical activity. Main activities included climbing, vaulting, riding, swimming, archery, climbing on ladders, poles and ropes, tilting and jousting, wrestling, fencing, jumping and dancing.

"There is no record of any system of physical training for the common people during the middle ages. However, certain apparatus was used by some medieval as well as ancient people. . . . Using other persons as apparatus, human towers were formed during sieges and at public performances. Acrobatic stunts have been known at all times."

 **History of gymnastics in modern time**

Modern physical education begins with the work of a group of leaders who were interested in education in general, but in physical education in particular the following scholars; Johann Basedow (1723-1790), Johann Guts Muths (1759-1839), Gerhard Vieth (1763- 1836) and Johann Pestalozzi (1746-1827).

**Johann Basedow, 1723-1790**

Basedow conducted the first gymnastics as part of the school work in Europe. He was the first modern writer and teacher of organized gymnastics of whom there are records. He regarded directed physical activities as a means to a complete education embracing both body and mind.

**Johann Guts. Muths, 1759-1839**

Guts Muths, is an educator and "the great grandfather of gymnastics," using Greek gymnastics a fundamental and adding new movements, published the first book on gymnastics, "Gymnastics for Youth‖. He seems to have successfully combined idealism, materialism and realism. His teaching methods provided for children as well as adults and included carefully selected exercises for girls. Commenting upon physical education in his Encyclopedia of Bodily Exercises, he stated. You shall be a sane supervisor and master of your body; you shall train it to vigorous manhood, making it skillful and obedient to all that is good so that you may grow to be a true man for yourself, your own kin, and the society in which you live.

His first gymnasium was out of doors, and in it were seesaws, climbing poles, and ropes, balancing beams and vaulting apparatus. The rope ladder, also a part of his equipment, probably was introduced by Basedow, who had realized its usefulness on board ship in the seaport town of Hamburg. The oblique wooden ladder also was used.

**Gerhard Vieth, 1763-1836**

Vieth is a mathematician and a scholar possessing an analytical mind, adhered closely to the Guts Muths system of gymnastics. He published an encyclopedia of bodily exercises (1794-5), in which he stressed the mental, moral and physical value of exercise. Passive exercises, "lying, sitting, swinging and being carried by means of mechanical devices, also bathing, massaging and the hardening of the body, . . ." And active exercises, "walking, climbing, jumping, and vaulting," were included in his system. He treated vaulting in detail and described side and long vaults, front, rear, squat, straddle and numerous other vaults and mounts. Vieth further described balance beams, jumping ropes, climbing ropes and poles, the horse, the table, and the buck (evidently a

form of leap frog). Since he wrote of vaulting over horizontal poles at different heights, it would indicate that early form of the horizontal and parallel bars were used as an apparatus.

**Johann Pestalozzi, 1746-1827**

Pestalozzi's greatest contribution was in general education, but he was the founder of free exercises and of calisthenics. He believed that methodical exercising trained the pupil intellectually, morally and esthetically. It is of interest to note, however, that the gymnastics of Guts Muths was practiced upon Pestalozzi playgrounds. The end of the 18th and the beginning of

the 19th centuries introduced a new era. The world was in an industrial, educational, and political

turmoil. Germany was suffering keenly from Napoleonic victories. Appeals were made to her leaders turn to education as a means to restore her prestige, and as a result, Germany eventually became a leader in educational thought and practice. The period seems to have given impetus to physical education in general and to gymnastics in particular in countries other than Germany.

Aside from Friedrich Ludwig Jahn (1778-1852) and Adolph Spiess (1810-1858), both of Germany, leaders of the times included Pehr Henrik Ling (1776-1839), Sweden; Archibald Maclaren (1820-1884), England; Phokion Clias (1782-1854), Switzerland; Francis Amoros (1770-1848), France; and Franz Nachtegall (1777-1847), Denmark.

**Friedrich Jahn, 1778-1852**

Jahn, the "Turn Father" of German gymnastics, presented a plan to the German people, whereby he hoped to promote national unity and physical strength through lumen societies, clubs of strong national character. Jahn was an enthusiastic, far-seeing teacher and leader. He was the first man to organize and popularize physical skill with a view to arousing the national spirit, to promoting self-discipline and bodily strength, and to stimulating the mental vigor of Germany's young manhood. He wanted to create "liberty loving, social and independent thinking. . . ." Thus he hoped to do "by strengthening the degenerated muscle groups of the body, thus liberating man from the shackles of an environment that made him feeble, that allowed his muscles, and consequently his mental vigor, to decay." To this end he devoted his energies. Unlike Guts Muths, who encouraged gymnastics among children, Jahn's program provided for adolescents

and adults only. His ardor brought the youth of the city to his playground, the first of its kind, where he imbued them with the spirit of self-reliance, encouraging keen rivalry in skill and in strength. Open air activity was preferred. When the need arose for apparatus upon which to play, Jahn and his students invented it, and thus he is credited with introducing the horizontal bar, the parallel bars, the side horse with pommels, the jumping standard and pits, balance beams, ladders and vaulting bucks. Jahn made no attempt to have his program adopted by the schools. Even had he done so, the government very likely would have frowned upon his efforts because his societies were not in favor at that time. In 1842, ten years before Jahn's death, gymnastics was introduced into Germany's public schools, but they were of a stilted and formal nature.

**Adolph Spiess, 1810-1858**

Spiess of Germany, trained in Pestalozzian methods, adapted both Guts Muths and Jahn gymnastics to his classes of boys and girls in Burgdorf, Switzerland. He added marching and free exercises set to musical rhythms, which aided in discipline and erect carriage. His book, "The Science of Gymnastics," contained graded exercises for boys and girls of all ages designed to develop the entire musculature. Through his efforts, gymnastics became a school subject in Switzerland, and Spiess is known as the "Father of School Gymnastics."Spiess did not favor Jahn's squad-leader plan, preferring to employ trained teachers instead, but these lacked the keen enthusiasm, foresight and ability that were characteristic of Jahn and Spiess. As a result, a formal attitude became apparent and has handicapped gymnastics ever since. The freedom and the ardor and the wide scope of activities which under Spiess' personal teaching had included music appreciation, playing, games, hiking, and outdoor exercises gradually narrowed down to a much smaller scale. The factor that Jahn had so earnestly encouraged, a rich, full, stimulating, outdoors, informal physical training program for all, was lost sight of when the work was carried on by less competent teachers.

**Pehr Ling, 1776-1839**

Ling, the father of Swedish gymnastics, patriotically attempted to imbue the youth of Sweden with the need of physical fitness as Jahn had done in Germany. He believed in the therapeutic and corrective value of the activity and he hoped to see gymnastics improve the weak as well as

The strong. He stipulated that exercises should be prescribed for the individual rather than in the group; that a system of gymnastics should be based on an accurate knowledge of the effect of the various exercises on the human organism; and that teachers should know the purpose and effect of every exercise upon the organism. He felt that Jahn's system led to complicated movements and did not lend itself to accurate recognition of causes and effects. He endeavored to simplify the activity in accordance with his speculative theory, derived from a study of anatomy and physiology. He invented an apparatus to fit his theory, permitting simple movements such as climbing, vaulting, lifting and balancing, all done on command. "For his purpose Ling invented the steel bars, the boom, the saddle, the window ladder, the low combination bench, ribbon and the vaulting box. These are known today as Swedish apparatus. To these were added the horse, the horizontal, vertical and oblique ropes, and climbing poles." Suited to formal group instruction, where all can work upon command, combinations of exercises on Swedish apparatus are somewhat limited. The regular apparatus, however, can be adapted readily to individual differences and permits a much wider scope of activity, depending upon the skill and creativity of the performer. Stunts are appealing and interesting to the performer. Hjalmar Ling, a son, developed his father's system further and originated the stall bars. Swedish Corrective Gymnastics did not come from Ling but from one of his students, Branting.

**Franz Nachtegall, 1777-1847**

Nachtegall, the father of Danish gymnastics, directed in Copenhagen the first recorded training school for teachers of gymnastics, known as the Military Gymnastic Institute. Some of the activities included "exercises upon hanging ladders, rope ladders, climbing masts and poles; also balancing, tug of war, and vaulting. For the vaulting, a wooden horse was used. Mats were placed around the horse to insure soft landing, and a teacher caught the vaulters who missed. This seems to be the first report upon the use of mats, although they were undoubtedly used long before." It is of interest to note that throughout history, the rise and fall of nations has seemed to coincide with the rise and fall of the physical stamina of their people. Greece rose to the height of her glory (leaving her indelible mark upon the world) during that period when the physical vigor, the patriotic zeal, the independence and freedom of her people were at their height. Athletic professionalism for the few and a lack of strenuous participation among the many

brought about a decline in the national physical stamina and a consequent decline in the power of

Greece.

The same may be said of the great Roman Empire and of Egypt. History indicates, too, that a decadent nation realizes the costly blunder it has made only after defeat at the hands of a physically superior enemy. A period of reorganization follows and attempts are made to imbue the nation with the need of physical improvement. In many instances a country has been able to save itself and has even become more powerful than previously by realizing its weakness. Such was Germany's case after her humiliation by Napoleon's forces. The great national movement introducing Jahn's Turnen Societies for the physical improvement of youths and adults of military age was an outcome of Germany's defeat.

**Olympic Gymnastics**

The first Olympics, held by the ancient Greeks in 776 B.C., were many things. They included religious worship, cultural celebrations, athletic festivals, and training exercises for the Greek armies. At first, a foot race was the only event. Over time, races of different lengths were added. Eventually other events were added, including boxing, chariot racing, horseback riding, and a pentathlon that included the discus throw, the javelin throw, and long jump, running, and wrestling. The Greeks also played a sport called pcinkration, which was a mix of boxing, wrestling, and kicking. One sport the ancient Olympics did not have, though, was gymnastics.

**The Birth of Olympic Gymnastics**

The first modern Olympic Games were held in Athens, Greece, in 1896 - 1,500 years after the last ancient Olympic Games were held. Gymnastics is one of the few sports that have been included in every modern Olympics. The first Olympic gymnastics competition did not look very much like the ones we see today. Many of the moves that we now see performed commonly by almost all world-class gymnasts had not been conceived of back then. Also, early gymnastics competition at the Olympics included several events that we now associate with track and field, such as the pole vault, broad jump, shot put, and the 100-meter dash. A rope climb and a stone

Heave events that have since been completely eliminated from the Olympics. Track-and-field events were not fully removed from international gymnastics competitions until 1954.

Seventy-one gymnasts from eight countries competed in the first modern Olympics, and an amazing fifty-two of them were from Greece. The other competing nations included Germany, Great Britain, France, Switzerland also included, Denmark, Sweden, and Hungary. Germany dominated the gymnastics competitions, winning both team competitions and more than half of all individual medals. In fact, they were the only team that competed on the horizontal bar. German gymnast Hermann Weingartner won four individual medals, while teammate Alfred Flatow won gold on the parallel bars and silver on the horizontal bar. Despite the overwhelming presence of the Germans, Switzerland's Louis Zutter managed to win three medals in gymnastics.

 **Gymnastics in Ethiopia**

After a World War II physical education program in Ethiopia reviewed emphasis on Swedish gymnastics and tumbling resulting in increased growth of the activity in schools after the war. Within the last four and half decades, there have been phenomenal movements of interest in the sport. Gymnastic is now one of the popular sports in Ethiopia, which is one of the main activities in the school physical education curriculum.

**1.2. The subject matter, values and purpose of gymnastics.**

The teacher of gymnastics and tumbling should be able to apply all of the psychological principles of teaching, of which motivation is outstanding. In addition, he should be equipped with:

1. An adequate understanding of the physical and psychological development that is possible through gymnastics and tumbling.

2. Knowledge of the proper gymnastic and tumbling nomenclature.

3. Knowledge of progressively arranged strength-building exercises.

4. The ability to demonstrate various stunts.

5. The ability to detect and correct errors promptly.

6. The ability to maintain firm discipline and to hold the interest of the individual.

7. An awareness of the importance of safety procedures.

8. A sense of the need of economy of time. Every second of the class period should be used to advantage.

9. An appreciation of good form and precise movement.

10. Methods of providing for individual differences. The superior performer should not be required to repeat work if he is ready for advancement.

11. Methods of grading the achievement of the individual. If a grade scale is set up, it should challenge every member of the class.

12. Methods by which problem-solving is encouraged, i.e., thinking through the execution of a stunt.

***Squad Leader, System***

Gymnastics may be taught effectively on a rotating-squad plan. There should be about eight or ten individuals in a squad. Advanced squad members should have been given additional instruction which enables them to act as leaders of a squad. A large class, thus can be handled in stations. Each will alternate from the hang to the support activities as he proceeds with his squad from station to station.

***The Whole-Parts Method of Learning***

The parts method should be used in introducing a new stunt. But the whole stunt, consisting of its many parts, should be demonstrated and described briefly for the benefit of the individual before he is permitted to make any attempt to master the selected part assigned to him. The learning of the tip on the high bar is a good example of this principle. A challenge is created with the presentation of the whole stunt and the performer becomes eager to learn the numerous, progressively arranged parts that make up a difficult whole. Complete mastery of the whole stunt should follow with relative ease if the stunt is properly presented.

***Progression from the Simple to the Complex***

Lesson plans should proceed progressively from the simple to the complex. Progressive lead-up activities should be given which contain elements identical to the desired end. Relatively

complicated coordination’s are part of almost all gymnastic feats, and in order that they may be learned correctly, they should be broken down into parts and learned separately. Slowed down movements (slow motion) in which the learner, with assistance, actually experiences the kinesthetic or muscles feel of the trick to be learned, is most helpful.

***The Success-Failure Relationship Is Important***

Participants should not be allowed to Motivation through competition and exhibition stimulates interest in gymnastics and tumbling, and provides added interest to the participants**.**

***Building Separate Stunts into Routines***

The competent performer should be encouraged to create routines that have continuity and unity instead of learning the set routines of the instructor. Practice too long without some success. It seems best, then, to teach moderately easy lead-ups, as previously mentioned, and in addition to provide an individual mat area (even though small) for each one or two performers. Thus, the inevitable mistakes may be made without attracting undue group attention.

***Motivation Is Increased Through Exhibitions and Competition***

Program Should Be Varied but not Superficial*.* Types of activity and their difficulty should be varied to obtain well-balanced development and to maintain interest. However, it is equally important to do enough different tricks of the same type to contribute to the desired end. Facilities, space, time, number in class and experience of the instructor will decide the selection of material**.**

***Working in Pairs for Safety and Quicker Learning***

Partner assistance in learning involves one person as a spotter who supports, guards and lends physical aid to the performer with a view to quicker learning and the relatively assured safety of the performer. Spotting technique must be taught as well as performance technique.

Spotting experience is as valuable as practice experience since the spotter must be on the alert constantly. Each student should have repeated opportunities to serve both as a performer and as a

spotter. For all but a few of the more dangerous of the elementary tricks, hand spotting without belts or ropes is most effective and a time saver.

***Suggested Class Procedure***

1. First day — general explanation of class administration and of the activities to be taught:

a. Acquaint class with apparatus.

b. Acquaint class with safety procedures/

c. Impress class with need of safety measures.

d. Give short, comparatively light workout, in order to minimize unduly severe aftereffects of dizziness and stiffness.

2. Warm-up before each day's class:

a. Limbering routine.

b. Ropes and cargo net.

c. Rolls (forward and backward) and dives.

d. On the apparatus, warm-up with some of the stunts that have been presented before.

3. Work in squads in sports program. Rotate squads to different apparatus so that they may work on the hang position and then proceed to the support position. In this way they will use different muscle groups.

4. Instructional work should be on a squad leader basis until they have developed enough strength to work independently and with safety. Emphasis should be given to the need of strengthening the grasps, triceps and abdominal muscles.

5. The class should be assembled in a semicircular formation on the deck for the introduction of each new stunt.

6. In presenting a new stunt it should be described and demonstrated simultaneously. If the instructor cannot do the stunt, it may be executed by an outstanding student. Talk as little as possible. Teach in a positive manner wherever possible.

7. The class should try the stunt. Give as much individual guidance as possible. To encourage the best performers to help those less efficient.

8. If mistakes are being made, call the group together and make the necessary corrections.

9. Those who are able to execute a stunt in proper form should have it checked for achievement.

10. The better performers should either help others in the class, or work on more advanced tricks.

11. The instruction should be individualized as much as possible. Each one should be encouraged to strive progressively according to his potentialities. The opportunity for individual advancement is lost if the instructor uses the formal method which requires everybody to do the same thing. A grade scale should encourage the learner to attain his utmost. Skills such as the handspring, and the hand balance should be taught, which the performer will want to practice in his spare time.

12. Frequent short practice periods are much more effective in learning new skills than prolonged periods of practice.

13. If apparatus has to be put away at the close of the period, students should line up for dismissal. Everybody should help to clear the deck. In stacking the mats, place them in pairs with the tops always together the top is the smoother of the two surfaces; the bottom usually is dotted with tassels. The working surface on top should be kept clean.

**In summary**, a beginning gymnast may be stimulated to enthusiastic participation in the activity by:

1. The sincere cooperation of competent gymnastic teachers.

2. The use of safe, adequate facilities and proper equipment.

3. The feeling of a prestige that accompanies the mastering of a stunt.

4. The presentation of motivating challenges or goals.

5. The desire of the performer to stretch to the utmost of his capacity.

6. The inclination of a "try-try again" spirit.

7. The freedom from injury.

8. The fosterage of courage and of initiative.

9. The correct guidance in the wise use of his time.

10. Capitalize upon the competitive element whenever possible.

**Values of Gymnastics**

In the introduction to G&T the authors explain that ―Gymnastics and Tumbling is included in the Naval Aviation Physical Training Program because of the strength and skills that are developed through participation in this sport. These include improvement of upper body strength, and training in quick and correct decision and action. Since there is no other activity to develop full upper body strength, agility and balance this sport occupies a prominent place in the Naval Aviation Training Program.‖

1. **Gymnastics contributes to the development of upper body strength**. Over fifty percent of the cadets admitted to the pre-flight schools have been found to be deficient in the upper body strength, especially in the muscles of the shoulder girdle, the triceps, the abdomen, and the Chest.

2. **Gymnastics provides opportunity for the development of power**. Rope climbing, throwing the medicine ball for distance, and gymnastic routines require maximum effort and hence develop power.

3. **Gymnastics provides for the development of muscular coordination or neuromuscular control.** The fundamental activities of running, climbing, and jumping are combined in a unique way in gymnastic routines. Twisting or turning, bending, circling, and swinging movements occur in rapid succession during the routines in the upright or standing position, in the hang, the support, and in various other positions. Perhaps no athletic activity other than gymnastics and tumbling provides the opportunity for the development of maximum muscular coordination and neuromuscular control and perhaps no war activity demands the acme of muscular coordination and neuromuscular control as much as aviation.

4. **Gymnastics contributes to the development** of suppleness, elasticity, litheness, and flexibility, permitting a full range of body movement and control.

5. **Gymnastics develops a sense of relocation**. A series of fast forward rolls on the mats, or hip circles on the horizontal bar, or a workout on the aero wheel or a trampoline, leaves the cadet extremely dizzy at first. Two weeks of practice, however, conditions him effectively so that he makes a satisfactory adjustment in a short time. Both the poise and equilibrium

are outcomes of the sense of re-location, which affords awareness on the part of the aviator that he is inverted when he is flying upside down.

6. **Gymnastics develops agility** – quick, easy, dexterous movements. Vaulting in a variety of positions teaches the fundamental principles of body control. The naval aviator or paratrooper may be called upon to overcome unforeseen hazards and obstacles during landing operations; hence he must be adept in vaulting and in jumping. He must have over learned the art of vaulting to the side, in a squat position, in a straddle, end-over-end, or in a dive, easily and with minimum effort. Gymnastics, then, dovetails with training on the obstacle course the most effective runner is the one who can skillfully, safely, and quickly adapt his gymnastics vaulting experience to the difficulties of the course.

7. **Tumbling teaches falling safely**. Practically every phase of his life as a cadet, or aviator, (or as a civilian, for that matter) may be materially aided by a knowledge of tumbling. When he first takes ―boot‖ training, when he takes conditioning hikes when he participates in football, basketball, or any other sports activity, the cadet who can tumble is that much better equipped to save him from injury caused by falling than one who cannot tumble.

8. **The trainee who is temporarily incapacitated** by minor injuries may participate in specially selected gymnastics, thus keeping in condition despite his handicap.

9. **Gymnastics and tumbling develop** body balance which is useful to the individual throughout life. Together with climbing, vaulting and falling, these skills are directly useful in various emergency situations.

10. **Gymnastics teaches the trainee** how to ascend, descend, and rest on a rope, - skills which are of paramount importance from a practical standpoint.

11. **Gymnastics develops a sense** of brave and courage yet discourages recklessness.

12. **Gymnastics develops attitudes** vital to the successful naval aviator: fearlessness, initiative, decisiveness, courage, perseverance, presence of mind, self confidence

**Purpose of Gymnastics**

The purpose of the gymnastic and tumbling program, planned progressively is to:

1. To improve the entire musculature.

2. Encourage quick and correct decision and action.

3. Build upper body strength.

4. Maintain the acme of physical fitness by the continuing practice of the skills previously learned.

**Classification of Gymnastics**

Gymnastics has **divided into**

**1. Competitive**

Competitive Gymnastics divided into

a. **Artistic gymnastics**: became an Olympic sport since 1896. With this gymnastics women compete in floor exercise, vault, uneven bar and balance beam. Men compete in floor exercise, vault, pommel horse rings, parallel bar and horizontal bars.

b. **Rhythmic Gymnastics**: became an Olympic sport in 1984. In these gymnastics female gymnasts compete on a mat using rope, hoop, balls and ribbons.

c. **Trampoline gymnastics**: became an Olympic sport in 2000.In this gymnastics man and women individually compete by constantly bouncing up and down on a trampoline while performing summer salts, twists and other movements.

2. **Therapeutic [remedial] gymnastics**: is a series of selected exercises that help to lessen pain.

3. **Educational nature, gymnastics**: is a program that changes to master tactics involving strength, flexibility and conditioning.

**Rhythmic Gymnastics**

**Warm-up**

A warm up-period is the first part of every training session, as well as preparation for competition. The importance of a warm-up, prior to exercise, cannot be overstressed. Warming up raises the body temperature and prepares the muscles, nervous system, tendons, ligaments and cardiovascular system for upcoming stretches and exercises. The chances of injury are greatly reduced by increasing muscle elasticity.

For rhythmic gymnastics, this part of the workout should be more than just a series of calisthenics used to warm up and stretch the athletes’ muscles. A traditional rhythmic gymnastics warm-up is done to music, beginning with

locomotors movements traveling around the mat and then moving on to stretching exercises, combined with body skills and dance elements. Many rhythmic gymnastics workouts begin with a ballet bar, which focuses on the athlete’s body position and alignment as well as warming up and stretching the muscles. Incorporating movement to music in the warm-up will not only be fun, but will instill a sense of rhythm and musicality that is important in rhythmic gymnastics.

**Warming Up**

 Raises body temperature

 Increases heart and respiratory rate

 Prepares the muscles and nervous system for exercise

 Stretches the muscles, increase the athlete’s range of motion

 Creates an awareness of correct alignment and body position

 Instills a sense of timing and rhythm to music

 Begins the practice session with fun and energy

The warm-up may be different for each practice session. Depending on the phase of the competitive season, the warm-up will vary in length and content. For example, in the first weeks of training, the warm-up may take up to 30 minutes, because the athlete will be learning basic body positions and skills during that time. As the season progresses and competition draws near, more practice time will be spent on performing competitive routines, and the athletes will just need sufficient time in the warm-up to prepare their muscles for the movements they will do in their routines. A warm-up period will include the following basic sequence and components:

**Activity Purpose Time (minimum):** Aerobic activities, which may include locomotive movements to music.

Warms up the muscles, teaches locomotors skills, increases musicality 5 minutes

Stretching Increases range of motion 10 minutes body skills & dance elements Introduces rhythmic gymnastics movements that will later be incorporated into routines Depends on the phase of the season.

**Teaching Rhythmic Gymnastics Skills. Stretching**

Flexibility is especially important for athletes participating in rhythmic gymnastics, because the sport is characterized. By supple body movements, fluid and graceful dance steps. Flexibility is achieved through stretching. As with other parts of the warm-up, stretching exercises can be performed to music, which will not only develop flexibility, but will increase the athletes’ ability to move with the music.

Before stretching, the athletes should warm up the muscles with a series of aerobic exercises. Stretches should be done gently and held for several seconds. Never use ballistic bouncing to stretch or force the athletes to stretch further than they can do comfortably. To achieve the maximum benefit, the athletes must do the stretches with correct body position and alignment.

It is also important to breathe deeply while stretching. As you lean into the stretch, exhale. Once the stretching point is reached, continue to inhale and exhale while holding the stretch. Encourage the athletes to make stretching a part of their daily life. Regular, daily stretching has been demonstrated to:

1. Increase the length of the muscle-tendon unit

2. Increase joint range of motion

3. Reduce muscle tension

4. Develop body awareness

5. Promote increased circulation

6. Improve self-image and overall wellness

Some athletes, such as those with Down syndrome, may have low muscle tone that makes them appear very flexible. Be careful not to allow these athletes to stretch beyond a normal, safe

range. To prevent injuries, athletes who are extremely flexible will need to develop the strength to control their flexibility.

In this guide, we will focus on stretches that are important for athletes participating in rhythmic gymnastics. Many of the stretches serve a dual purpose, because they are preparations for specific Body Skills. For example, splits show the position an athlete will try to achieve during a leap. Also, exercises such as pointing and flexing the feet develop strength and flexibility in the ankles, as well as teach the athlete to point the toes, which is very important in all gymnastics skills. You will find more of these references listed with the stretches below.

**Neck**

Exercises to warm up the neck will teach the athlete to use the head in different positions. It is important for the body to remain motionless, in alignment, when the athlete moves the head. In rhythmic gymnastics, the athlete will move the head to follow the hand apparatus, especially on tosses, and in the choreography of competition routines. Never circle the head in a complete rotation or move the head forcefully.

**Stretching- Quick Reference Guidelines**

**With an aerobic warm-up**

Begin stretching only when the athletes’ muscles are warm.

**Be Systematic**

Start at the top of the body and work your way down.

**Check body position and alignment**

Athletes must always have the correct body position and alignment. Remember, stretching exercises are also training exercises for Body Skills.

**Begin Relate stretches to rhythmic gymnastics skills**

Remind the athletes that the stretches during the warm-up will be the same motions they will repeat later when they practice body skills and work with the hand apparatus.

**Emphasize fluidity and suppleness**

Make slow, progressive stretches.

Do not bounce or jerk to stretch farther.

Never force an athlete to stretch farther than is comfortable.

**Use Variety**

Make stretching fun! Stretch of music.

Use different exercises, such as ballet, to work the same muscles.

**Breathe Naturally**

Do not hold your breath.

Use breathing to increase the amount of stretch.

**Allow for Individual Differences**

Athletes start and progress at different levels. Reward any attempt to improve flexibility.

Be aware that athletes who are extremely flexible need to develop the strength to control that flexibility.

**Stretch Regularly**

Stretch during every practice session. Encourage athletes to stretch at home.

**Cool-Down**

The cool-down is as important as the warm up; however, this portion of the workout is often ignored. Stopping an activity abruptly may cause pooling of the blood and slow the removal of waste products in the athlete's body. It may also cause cramps, soreness, and other problems for Special Olympics athletes. The cool-down gradually reduces the body temperature and heart rate and speeds the recovery process before the next training session or competitive experience. Since rhythmic gymnastics is not a sport that requires constant aerobic activity, the cool-down is most often a good time for the coach and athlete to talk about the session or competition. It is also a good time to do stretching. Muscles are warm and receptive to stretching movements. The cool- down period may be used for strength and conditioning training.

**Activity Purpose Time (minimum)**

 Slow aerobic jog Lowers body temperature

 Gradually lowers heart rate

 Depends on the nature of the practice session. May not be necessary.

 Stretching Removes waste from the muscles

 Improves flexibility 5 - 10 minute

 Strength and conditioning

 Improves overall fitness

 Improves areas of weakness that affect the athletes’ performance 5 - 10 minutes

 Especially important in the pre-competitive

**1.3. A factor that affects in gymnastics**

**1.** Speed

 Skill

 Height

 Age

 Power

 Somatic type

There are three (3) types of somatic types:- A. Endomorph: This is the plumy type

B. Mesomorph: - This is the muscular type

C. ectomorph: This is the skinny type

**2. Strength**

**A. A type of muscle fiber**

One of the most influential factors is muscle fiber type. There are a two (2) types of muscle fibers

**I. Slow twitch fibers**

 Produce small levels of force for long periods of time and thus, are better suited for endurance activist.

**II. Fast twitch fibers**

 Are best used for anaerobic activate

 Produce high levels of force for a short period time

 Are best suited for power, activate such as weight

 Most men and women have an equal combination of both

**B. AGE**

 Studies show that people of all ages an increase their muscles size and strength as a result of as safe and effective strength-training program.

 The rate of strength and muscle gain appears to be greater from age 10-20, the years for pick growth and development

**C. Gender**

 Doesn’t affect the quality of our muscles, but does influence the quantities.

Men generally have more muscle tissue than women’s do because muscle size is increased by the testosterone, e male sex hormone.

**D. Limb and muscle length**

 Naturally determined is limb length

Persons with short limbs tends to be able to lift more weight because of advantageous leverage factors (arm and legs)

Persons with relatively long muscles have greater potential for developing size sand strength than persons with relatively short muscles.

**E. Point to Tendon insertion**

Example: - Bekele & Chala have the same arms and muscle length how eve, Bekele biceps tendon attaches to his forearm farther from his elbow into than Chala does.

**3. Endurance**

 Central nervous system

 Athletic with power

 Aerobic capacity

 Anaerobic capacity

 Speed reserve

 Therefore, considering the needs of training, there are two kinds of endurance

**A. General endurance**

Is the capacity of performing a type of activity that involves many muscles groups and systems (CNS, Neuron muscular and cardio respiratory system) for a prolonged time.

**B. Specific endurance**

Is referred to as endurance of playing, sprinting and the like depend upon the particularities of each sport or they may repetitions of the motor acts of each sport

**4. Flexibility**

 Heredity

 Age

 Gender

 Connective tissue elasticity

 Body composition/ type

 Gender

 Strength of opposing muscle groups

 Injury (Scar tissue, altered body structure).

 Mode and level of activities

 Internal tissue temperature

 Form, type, and structure of joint

**1.4. Safety measure and support in gymnastics**

The general requirements contain guidance for safety education of gymnastics is as follows:

1. **Concerning students** – clothing, footwear, jewelry etc.

2. **Environment** – changing area, playground, surroundings etc.

3. **Concerning the level of students** – capacity level, skill development level, coordination, spatial awareness, body awareness, self-control, application of time, cleanliness, use of apparatus etc.

4. **Concerning the session** – clear objectives, lesson contact, growth-up procedure, tasks and feedback, noise, organization etc.

5. **About the apparatus** – size, weight, dimensions, stability and condition, mat arrangement, safety check, maintenance etc.

6. **About the teacher** – safety awareness, knowledge and understanding of the session content, knowledge and understanding of the session content, knowledge and understanding of apparatus management and use, positioning during instruction, clothing, assistance, guidance teaching style, progression etc.

**Chapter 2: Practical preparation of Basic Gymnastics**

**What is Training?**

Training is a systematic process with the objective of improving an athlete’s fitness in a selected activity. It is a long term process that is progressive and capabilities. Training programmers use exercise or practice to develop the qualities required for an event. The process of training can be planned, because training follows certain principles. These principles of training need to be fully understood before the coach can produce effective long term programmers. These principles are

**1. Overload principle**

 Indicates that to improve any components of fitness you must exert yourself more that you usually do

 Do more than normal

 Stress that component more than normal, i.e. you must overload your body or make it do more than normally does

**For example**: to improve your muscles, you need gradually to lift more and more weight.

- If you want to run fast, you need to increase the speed and/or distance at which you run at that speed. -to increase flexibility, a muscle must be stretched longer than normal.

- To improve muscular endurance must be exposed to sustained exercise for longer than normal period.

- After load exercise therefore.

- If you exercise more than usual, fitness increased

- If you exercise less than usual, fitness decreased

- If you exercise the same as usual, fitness stays the same

**2. The principle of progression**

State that, you must start to exercise slowly and gradually increase the load (apply over load gradually) over aneroid of time. How eve, the overload should not be increased too slowly or too rapidly.As your fitness improves, you must gradually increase what you do until you reach the optimal amount what you do until you reach the optimal amount of exercise (load) which ranges between the minimum amount necessary to bring about a change (the threshold of training) and an amount just short of ―Over doing it (the danger zone). For example: If you do too much work with your hands. Without prior experience you develop blisters. You will not be able to work the next day or you are less able to work and you may require a day or more of recovery, before you are back normal. If, however, you develop calluses. The callus makes your hand tougher, and you are able to work longer without injury or soreness

**3. The principle of specificity**

Indicates that to build a specific component of fitness indicates that to build a specific component of fitness and to develop specific muscle group the body you must to do a specific kind of exercises designed for that purpose.

For example

- Lifting weights build muscle strength, but will not improve flexibility

- Stretching exercise can improve flexibility, but it may do little for altering body compassion.

- -Bending the elbow with a weight in a hand may increase the strength of the biceps muscles as intended but it will be develop the triceps.

- -If you exercise the arms you build fitness of the arms not your legs or vice versa. In this

regard, it’s not unusual to see some people with disproportional to fitness development.

**Eg**. Some Gymnasts- have good upper body development but poor leg development, where as some soccer players have well developed legs but luck upper body development

**NB:** some exercises a developed more than one fitness component. For example, jogging can improve cardiovascular fitness and at the same time develops body leanness if performed in the correct amount

**4 .The principle of reversibility (disuse)**

- State that inactivity or disuse leads to the loss of benefits achieved as a result of overload.

- -Training effects are gradually lost when the training stops.

- -This principle has been summarized by the phrase‖ use it or lose it‖

- -The body will also adapt to less stress

- -It takes only three to four weeks for your body to get out of condition

- -Deterioration can be seen most readily in aerobic activities as the muscles quickly lose much of this ability to use oxygen.

- Anaerobic activity is less readily affected by lack of training. This is because of the use of oxygen in onto crucial.

**5. The principle of Diminishing Returns**

Indicates that the more benefit you gain as a result of activity, the harder additional benefit to achieve

6. **The principle of variety**

– States that maximum benefit it obtained when a training program includes a variety of methods.

**Conditional Exercise**

Conditioning is the physical and psychical foundation which acquired during training to meet the requirements of competition.

General conditions is directed towards a balanced development of all capabilities related to a player's physical condition, but conditioning training has towards competition, too, and contain the elements which is demanded. There is no better ways to condition that with the ball for junior as well as adults.

**Benefits for physical conditioning program**

Some of the benefits include

- Enhance confidence in a match situation

- Produces stronger, more resilient players allow cognitive skill to be optimized

- Improve techniques and enhance the production of power

- Reduce the number and severity of injuries

- Promote mental strength.

**Speed**

-It is the ability to overcome distance in the shortest possible time, the deciding factor in speed training is the use of light up to the maximum movement velocity.

- The increase of sped is considerably limited and its limitation depend on genetic structure of the muscles, while muscle fibers constructs faster than red fibers, i.e. a player's whole muscles consists of mainly of red fiber cannot develop into a top. -class sprinter.

**We have different types of speed**

a. Reaction speed: - anticipation support reaction speed b. Acceleration, speed: - basket baller it need most

c. Sprinting speed: - with or without the ball

**Reaction time speeds**

It is the time it takes for us to think about what needs to be none and ten begin to do it.

**Eg**. A printer gets quicker at reacting to the gun with practice.

**Types of Reaction time**

A. **Simple reaction time**: is occurs when a subject is asked to respond to stimulus by making a specific field response.

**Eg**. Pushing button when a light games on.

**B. Choice Reaction time**

It involves either a subject responding to several stimuli each requiring different response. The more choice that you have, the more information you must process and longer to reaction time

**Eg**. Minor games of Green yellow, red

**Speed training by the repetition method**

- Intensity-max 95-100%

- Duration-2-5 second to cover 5-30m

- Interval-complete recovery form 180b/m-80% b/min

- Repetition- 5-10 time

- Extent- 2-4 services

**Principles of speed training**

- Muscles must be prepared by proper warming up.

- Speed is trained in the beginning to the main parts of a training session.

- Speed training, to have an optimal influence on the Nervous system should not follow activities that rate fatigue.

- Sub-maximum and maximum intensity have to be applied.

- The volume of speed training remains relatively limited. Because of the high demands of the Neuromuscular system

- Distance between 5-30 meters considered as advantages

- The interval between single repetitions is up to 3minutes.

- The main training methods are repetition and intensive interval method

**Strength**

Is the force produced when a muscles group is the process of lifting, moving or pushing a resistance? Strength to overcome resistance/own body weight opponent or to oppose on obstacle through muscular strength.

The strength needed for a sprinter to explode from the blocks is different to the strength needed by a weight lifter to lift a 200kg barbell.

**How do we get strong?**

A muscle will only strengthen when it is worked beyond its normal operation, it is over loaded. Overload can be progressed by increasing the:

- Number of repetitions of an exercise

- Number of sets of the exercise

- Intensity- reduced recovery time

**How do we develop each strength?**

1. **Maximum strength** can be developed with

–weight training

2. **explosive/speed strength** can be developed with

- conditioning exercises

- Complex training sessions

- Medicine ball exercise

- Polymeric exercised

- Weight training

3. **Strength endurance** can be developed with

 Circuit training

 Dumbbell exercise

 Hill and harness running

 Weight training

**Classifying of strength**

1. **Maximum strength** is extreme strength which the nerve muscles systems are able to exert with maximum constrictions. It’s mainly used in weight training wrestling etc. but it is hamper the foot balers especially when **running,**, **dribbling** and **passing**. There is no significant correlation between maximum strength and explosive or speed strength ability in foot baller. This type of training is not recommended for football game. **Eg: jumping**

**2. Speed strength /explosive strength**

Speed strength is the ability to overcome resistance at a high constriction speed .This types of strength is needed by basket baler or gymnastics for reaching as fast possible for heading and combating the opponents in any situation. It is composed of speed and strength and it results in dynamic movement. It depends on the central nervous, system and players’ coordination speed strength is trained either by intensive interval method or by repetition method.

 intensity-sub-maximum 75-90%

 interval–incomplete or complete recovery

 Duratio-5-10 second

 Repetition-4-10times

 Extent -2-4 serials

**3. Strength endurance**

It is the ability of the Organism to resist fatigue with ling lasting strength performance. The emphasis has more on endurance aspect, i.e. that strength performance should be applied during the whole time of a competition.

**Training examples**

* Circuit training
* Exercise with medicine ball
* Exercises with partner
* Heading at the ball pendulum
* Weight training
* Dumbbell exercise
* Hill and harness running

**Flexibility**

**Flexibility** is the movement available at our joints usually controlled by the length of our muscles. This is often thought to be less important than strength or cardio vascular fitness. However, if we are not flexible or movement decreases and joints become stiff.

Flexibility in sports allows us to perform certain skill more effectively, for example a gymnast, dancer driver must be highly flexible, but it is also important to other person to aid performance and decreases the risk of injury.

In daily activities we must be flexible to reach for something in a cupboard, or off the floor

**To also helps:**

 prevent injuries

 improve posture

 reduce low back pain

 Mention healthy joints

 improve balance during movement

**Coordination**

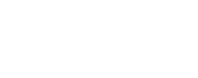
Is the ability to perform movements of various degrees of difficulty, very quickly and with efficiency and accuracy? It is considered that an athlete with good coordination is capable not only of performing a skill well, but also of rapidly solving training.

**Development of coordination**

The coordination required for running, Jumping and throwing can be developed from a young age. Girls between the ages of 8 and 11 and boys between the as of 8 and 13 have exertion rates of learning. Basic coordination exercises that are learned at this age become the foundation for later event specific skill development. In the mature athlete coordination exercises and drills remain important as they maintain a balance against the imbalances caused by very specific

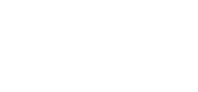
training.

Maximum



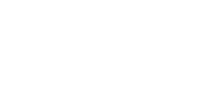
strength

Stretching endurance

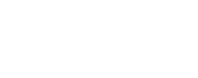


Flexibility

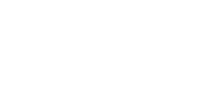
coordination



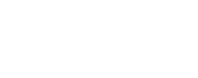
Elastic strength



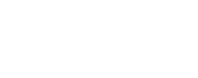
Aerobic endurance



Speed endurance



Maximum speed



**Agility**

Agility, Sometime referred to as the maneuverability of the body, is the ability to rapidly change the position and direction of the body parts. Heredity is a major factor in an individual’s level of agility, but it also depends on strength, sped, coordination and dynamic balance many individuals are able to improve agility by increasing their ability in these variables. Agility is important in all activities and sports. Individual and team sports involve quick starts and stops rapid change of direction, efficient foot work, and quick adjustments of the body or body parts. Individuals with good agility have a better enhance of success in a physical activity than individual with poor agility. Agility test items or usually of three types:

1. Change in running direction

2. Hang in body position

3. change in body part direction examples of the three examples types are the obstacle run (change in running direction) squat thrusts (change in body position and the test that requires a change in the poison of the hands or feet (change in body part direction). Agility tests that require only movement of the hands or feet are rarely used in physical education .

**Activities to develop Agility**

If you diagnose some athletes with poor agility you should attempt to improve this agility. Mc clenaghan and Gallahue (1978) suggest the following Activities for the development of agility in Athletes

**A .Change in the height of the body**

1. Alternative jumping maximum and minimum heights

2. Alternate fast and slow jump

3. Hop on one foot

4. Jump over a turning rope

5. Jump rope with a partner

**B. change in Distance**

1. Jump as far as you can

2 .Jump as near as you can

3. Jump as near as you con

4.Jump back ward

5. Walk back ward

6. Jump and land lightly

**C. Changes in direction**

1. Jump and run

2. Run between chair

3. Jump in a circle, square, triangle

4. Walk back ward

5. Jump and land

6. jumping over a rope are turning

**Balance**

Balance is the ability to maintain equilibrium against the force of gravity. The balance center (semicircular canal) in the inner ear, the kinesthetic sense in the muscles and joints (―feel‖ of an activity)

And visual perception on tribute to balance. In certain positions, balance also is affected by strength. It the supporting muscles can not hold the body weight body parts or an external weight

firmly in position balance is limited. For some individuals increased strength results in improved balance .

Basically three are two types of balance static and dynamic. The recovery of balance after the body’s balance has been disturbed, may also be considered a type of balance. Static balance the ability to maintain equilibrium while stationary is often thought of the steadiness. To maintain static balance the center of gravity must be over the base of support . Assuming a position to shoot a rifle. Looking through a microscope and posing for a photo grapier re examples of static balance .

**Dynamic balance:** is the ability to maintain equilibrium while in motion or to move the body or parts of the body form one point to another and maintain equilibrium dancing, walking driving a golf ball and bowling are examples of dynamic balance. Static and dynamic balance are necessary for successful performance in physical activity.

**Activities to develop balance**

Balance can be improved through extensive practice of activities that place individuals

1. Balanced position that they attempt to maintain

2. in balanced poison that helps them develop a ―feel‖ (kinesthetic sense) for such positions

Balance also can be improved though activities that place individuals in state of in balance forcing to attempt to recover balance.

Nichols Arsenault and Giuffre (1980) recommended the following

**Static balance activity**

**A. Knee balance**: In a knee ling poison, attempt to balance on one knees while the arms to the side.

The poison is help for 10 to 15 seconds, then the other knee is used

**B. stork stand**:- while in the same position as the stofk stand test, attempt to hold the poison for10-

20 seconds.

**C. Swan stand**:- lean forward at the hips and lift the right foot off the floor while balancing on the left foot, bit the right leg behind as high as possible. Hold 10 to 15 seconds repeat on the other foot.

**d. V-sit**:- sit on the floor and lift the arms and legs into the air while balancing on the buttocks. Hold for 10 t0 20 seconds.

**Dynamic Balance activities**

A. Tape line: Tape a line on the floor, then

1. Walk for ward, back word side ways

2. Hip with the eyes closed

3. Hop while holding on different objects

4. Hop in and out of tires

B. **Rug twiste**r:- place a rug sample so that the rubber backing faces upward stand on the rug and twist back I forth to move around the floor

D**. hop leap**:- place tape marks on the floor approximately 1 yard apart maintain a one-foot static balance on each mark for 5 seconds

**Cardiovascular endurance**

It is the ability of the heart, Lung and blood vessels to send fuel and oxygen to the tissues of the body during long period of vigorous activity. In other worlds it is defined a resistance to fatigue and quicker recovery after fatigue. It keeps the heart muscles, blood vessels, blood and lungs in excellent condition the ability to gain cardio vascular endurance depends on the frequency intensity and length of time spent inter training .it also depends on the condition of your body and your heredity.

**Benefit of cardio vascular endurance**

-keep from being easily fatigued and quick recovery after fatigue

-increase oxygen capacity

-the accumulation of fat deposits on arterial walls

-increased supply of red blood cells and hemoglobin

-eliminate metabolic waste product

**Training for cardiovascular endurance**

Success in cardiovascular endurance sports requires a high aerobic capacity. Regardless of the type of activity you perform you derive energy from high energy fuel that must be available to the muscle fiber. The breakdown of this high energy fuel in the muscle cells allowing you to perform all types of exercise. To continuous exercising the body must replenish these energy sores in a continual basis.

For some performers success depends on the ability to sustain activity for long period of time without stopping. Distance runners and swimmers are good examples. This types of performers are in special needs of high level of cardio vascular fitness, or aerobic capacity. In aerobics exercise adequate oxygen is available to use the carbohydrates and fats available in the body to rebuild the high energy fuel the muscles needs to sustain performance. Aerobic exercises increases aerobic capacity( cardiovascular fitness) by enhancing the body’s ability to supply oxygen to the muscle as well as their ability to use it. Cardiovascular fitness can be developed exercising 3 to 6 per weeks unlike less intense life styles physical activities, the types of activity that promote cardio vascular fitness may be done as few as 3days a week additional benefits occur with added a days of activity.

**Chapter 4: Apparatus Exercises**

**Balance beam**



Daniela Silivaș performing on the balance beam at the 1987 World Championships

The balance beam is an artistic gymnastics apparatus, as well as the event performed using the apparatus. Both the apparatus and the event are sometimes simply referred to as "beam". The English abbreviation for the event in gymnastics scoring is BB. The beam is a small, thin beam which is typically raised from the floor on a leg or stand at both ends. The balance beam is only performed by female gymnasts. Beams are usually made of leather like material.

Balance beams used in international gymnastics competitions must conform to the guidelines and specifications set forth by the International Gymnastics Federation Apparatus Norms brochure. Several companies manufacture and sell beams, including AAI (USA), Jannsen and Fritsen (Europe) and Acromat (Australia). Most gymnastics schools purchase and use balance beams that meet the FIG's standards, but some may also use beams with carpeted surfaces for practice situations. While learning new skills, gymnasts often work on low beams that have the same dimensions and surface of regulation apparatus, but are set a very short distance from the ground. They may also work on practice beams, mini beams, road beams, or even lines on a mat. Originally, the beam surface was plain polished wood. In earlier years, some gymnasts competed on a beam made of basketball-like material. However, this type of beam was eventually banned due to its extreme slipperiness. Since the 1980s, beams have been covered in leather or suede. In addition, they are now also sprung to accommodate the stress of high-difficulty tumbling and dance skills.

Dimensions

Measurements of the apparatus are published by the Fédération Internationale de Gymnastique (FIG) in the Apparatus Norms brochure.

* Height: 124 centimeters (4.07 ft)
* Length: 500 centimeters (16 ft)
* Width: 10 centimeters (3.9 in)

Daniele Hypólito performing on the balance beam in 2007

In the early days of women's artistic gymnastics, beam was based more in dance than in tumbling. Routines even at the elite level were composed with combinations of leaps, dance poses, handstands, rolls and walkovers. In the 1960s, the most difficult acrobatic skill performed by the average Olympic gymnast was a back handspring.

Balance beam difficulty began to increase dramatically in the 1970s. Olga Korbut and Nadia Comaneci pioneered advanced tumbling combinations and aerial skills on beam; other athletes and coaches began to follow suit. The change was also facilitated by the transition from wooden beams to safer, less slippery models with suede-covered surfaces. By the mid-1980s, top gymnasts routinely performed flight series and multiple aerial elements on beam.

Today, balance beam routines still consist of a mixture of acrobatic skills, dance elements, leaps and poses, but with significantly greater difficulty. It is also an individual medal competition in the Olympics.

International level routines

For detailed information on score tabulation, please see the Code of Points article.

A beam routine must consist of:

A connection of two dance elements, one a leap, jump, or hop with legs in 180 degree split

* A full turn on one foot
* One series of two acrobatic skills
* Acrobatic elements in different directions (forward/sideward and backward)
* A dismount

The gymnast may mount the beam using a springboard or from the mat; however the mount must come from the Code of Points. The routines can last up to 90 seconds.

Scoring and rules

Several aspects of the performance determine the gymnast's final mark. All elements in the routine, as well as all errors, are noted by the judges.

Deductions are taken for all errors made while on the beam, including lapses in control, balance checks (i.e., wobbling or stumbling to maintain balance), poor technique and execution, and failure to fulfill the required Code of Points elements. Falls automatically incur a deduction of 1.00.

Apparatus specific rules



The gymnast may compete barefoot or wear special beam shoes if she so chooses. She may also chalk her hands and/or feet for added stability on the apparatus. Small markings may also be placed on the beam. Once the exercise has started, the gymnast's coach may not spot her or interfere in any way. The only time the gymnast may be accompanied on the podium is in the case of a mount involving a

springboard. In this instance, the coach may quickly step in to remove the springboard from the area.

In the event of a fall, once the athlete is on her feet, she has 30 seconds to remount the beam and continue the routine. If she does not return to the beam within this time limit, she is not permitted to continue.

Under FIG rules, the maximum allowed time for a balance beam routine is 1:30 minutes. The routine is timed on the scoreboard timer, which is visible to both the gymnast and judges. In addition, a warning tone or bell is sounded 1:20 into the exercise. If the gymnast has not left the beam by 1:30, another bell is sounded, and a score deduction is incurred which is .1.

**Horizontal bar**

The horizontal bar was used by acrobats in ancient Greece and Rome, and on through the Middle Ages. It was introduced into gymnastics by Johann Christoph Friedrich GutsMuths in his 1793 book Gymnastik für die Jugend, which in turn inspired further use and development by Friedrich Ludwig Jahn in 1811

The horizontal bar, also known as the high bar, is an apparatus used by male gymnasts in Artistic Gymnastics. It traditionally consists of a cylindrical metal (typically steel) bar that is rigidly held above and parallel to the floor by a system of cables and stiff vertical supports. Gymnasts typically wear suede leather grips while performing on the bar. Current elite-level competition uses a more elastic fiberglasscore rail similar in material to the rails used in the women's uneven bars and men's parallel bars apparatus.

The gymnastics elements performed on the horizontal bar are regulated by a Code of Points. A bar routine, which is a sequence of several bar skills, usually includes giants with various grips (overgrip, undergrip, dorsal grip, and mixed grip), in-bar work, turns, and release and regrasp skills, and a dismount. The horizontal bar is often considered one of the most exciting gymnastics events due to the power exhibited by gymnasts during giant swings and spectacular aerial releases and dismounts that often include multiple flips or twists and, in some cases, airborne travel over the bar.

Dimensions

The mechanical dimensions of the horizontal bar apparatus are specified in FIG's Apparatus Norms brochure:

* Height: 278 cm (109 in) (including about 30 cm (12 in) landing mats)
* Length: 240 cm (94 in)
* Diameter of the bar: 2.8 cm (1.1 in)

Grips

This section may be confusing or unclear to readers. (August 2012)

The manner in which the horizontal bar is grasped by a gymnast is called the grip (not to be confused with the suede leather grips that are worn on the hands). Each grip is commonly used for a particular set of skills. When gymnasts compete on the horizontal bar they are often required by the Code of Points to use specific grips.

The overhand grip, or regular grip, is the standard grip used for the horizontal bar. On the overhand grip the hands circle the bar with the backs of the hands facing the gymnast.

* A dorsal grip (also known as the dorsal hang) is an overhand grip employed while the gymnast's legs pass through the arms into a "skin the cat" position. The overhand grip is used in giant swings, and the dorsal grip in German Giant Swings.
* The reverse grip and underhand grip, is the opposite of the overhand grip. The palms of the hands face the gymnast. It is similar to the grip used in chin-ups. Forward giant swings are among the skills that use this grip.
* The elgrip is also an underhand grip, In an elgrip or L-Grip or eagle grip a gymnasts hands are turned 180 degrees outward from an over grip. Thumbs are turned out, but in the opposite direction of an under grip. This position requires flexible shoulders to swing comfortably.
* The mixed grip is a combination of the overhand and underhand grips with one hand in each position. This grip can be used to gain more height on release skills.

**Pommel horse**



The pommel horse (also side horse) is an artistic gymnastics apparatus. Traditionally, it is used by only male gymnasts. Originally made of a metal frame with a wooden body and a leather cover, modern pommel horses have a metal body covered with foam rubber and leather, with plastic handles (or pommels).



An early pommel horse

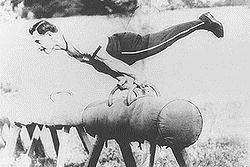
The pommel horse was developed centuries ago as an artificial horse used by soldiers to practice mounting and dismounting. Even Alexander the Great is believed to have used two.

Dimensions

Measurements of the apparatus are published by the Fédération Internationale de Gymnastique (FIG) in the Apparatus Norms brochure.

* Height from top surface to floor: 115 centimeters (3.77 ft) ± 1 centimeter (0.39 in)
* Length at top: 160 centimeters (5.2 ft) ± 1 centimeter (0.39 in)
* Length at bottom: 155 centimeters (5.09 ft) ± 1 centimeter (0.39 in)
* Width at top: 35 centimeters (14 in) ± 1 centimeter (0.39 in)
* Width at bottom: 30 centimeters (12 in) ± 1 centimeter (0.39 in)
* Height of the pommels: 12 centimeters (4.7 in) ± 0.5 centimeters (0.20 in)
* Distance between the pommels: 40 centimeters (16 in) –45 centimeters (18 in) (adjustable)

Routines



A typical pommel horse exercise involves both single leg and double leg work. Single leg skills are generally in the form of scissors. Double leg work however, is the main staple of this event. The gymnast swings both legs in a circular motion (clockwise or counterclockwise depending on preference) and performs such skills on all parts of the apparatus. To make the exercise more challenging, gymnasts will often include variations on a typical circling skill by turning (moores and spindles), by straddling their legs (Flairs), placing one or both hands on the pommel or the leather, or moving up and down the horse placing their hands on the pommel and/or the leather (travelling).

Routines end when the gymnast performs a dismount, either by swinging his body over the horse or going through a handstand to land on the mat. The pommel horse, its gymnastic elements, and various rules are all regulated by the Code of Points.

Pommel horse is considered one of the more difficult men's events. While it is well noted that all events require a certain build of muscle and technique, pommel horse tends to favor technique over muscle. This is because horse routines are done from the shoulders in a leaning motion and that no moves need to be held unlike other events. Therefore, stress induced in one's arms is reduced meaning less muscle is needed in this event than events like still rings or parallel bars.

**International level routines**

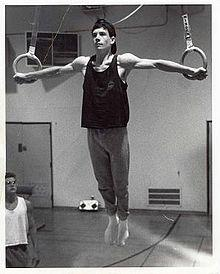
A pommel horse routine should contain at least one element from all element groups:

* Single leg swings and scissors
* Circles and flairs, with and/or without spindles and handstands
* Side and cross support travels
* Kehrswings, wendeswings, flops and combined elements
* Dismounts

Scoring and Rules

As with all events in the Fédération Internationale de Gymnastique guidelines, form is crucial to any successful routine. For pommel horse, form consists of keeping one's feet pointed and legs straight during the entire routine. The gymnast should keep his legs together during all elements, exceptions beings scissors, single legged elements, and flairs. Gymnasts are also deducted for not using all three sections of the horse and pausing or stopping on the apparatus. Deductions also apply for brushing and hitting the apparatus.

**Rings (gymnastics**

The rings, also known as steady rings or still rings (in contrast to flying rings), is an artistic gymnastics apparatus and the event that uses it. It is traditionally used only by male gymnasts, due to its extreme upper-body strength requirements. Gymnasts typically wear ring grips while performing on the rings.

The apparatus consists of two rings that hang freely from a rigid metal frame. Each ring is supported by a strap, which in turn connects to a steel cable that is suspended from the metal frame. The gymnast, who grips one ring with each hand, must control the movement of the rings

Dimensions

The measurements of the standard apparatus are specified by Fédération Internationale de Gymnastique (FIG) in its Apparatus Norms document:

* Inner diameter: 18 centimeters (7.1 in) ± 0.1 centimeters (0.039 in)
* Distance from point of attachment to lower inner side of the rings: 300 centimeters (9.8 ft) ± 1 centimeter (0.39 in)
* Distance between two points of attachment: 50 centimeters (1.6 ft) ± 0.5 centimeters (0.20 in)

Routines

An exercise on rings consists of swing, strength and hold elements. Generally, gymnasts are required to fulfill various requirements including a swing to held handstand, a static strength hold, and an aerial dismount. More experienced gymnasts will often perform more than one strength element, sometimes swinging into hold positions or consecutively performing different holds.

One of the most widely recognized skills performed on the rings is the Iron Cross, which is executed by extending both arms straight out from the sides of the body while suspended midair for at least two seconds. Other common strength moves include the inverted cross (i.e., vertically inverted Iron Cross) and the Maltese cross, in which the gymnast holds his body parallel to the ground at ring height with arms extended laterally. Swing elements include giant swings from handstand to handstand, similar to giants performed on the horizontal bar. Elements on the rings are regulated by the Code of Points.

International level routines

A rings routine should contain at least one element from all element groups:

* Kip and swing elements (including to L-sit)
* Swings to handstand
* Swings to strength hold elements (not L-sits)
* Strength elements and hold elements
* Dismounts

Scoring and Rules

Gymnasts will take deductions for form similar to other apparatus. On rings gymnasts will also take deductions for having bent arms in strength elements, or using the straps/cables to support or balance themselves. There are also deductions for excessive swinging of the cables during the routine.

Gymnasts who specialize in the Rings discipline

* Albert Azaryan
* Akinori Nakayama
* Jury Chechi
* Yordan Yovchev
* Chen Yibing
* Arthur Zanetti

Other uses

Aside from their primary use in men's gymnastics, rings are sometimes used by both men and women in various fitness regimens

A springboard is a platform set upon one or usually multiple springs used in artistic gymnastics to propel a gymnast who jumps upon it further than if they had otherwise jumped off a fixed platform. The springboard is a vital part of the vault event, and is commonly used in some routines of other events, such as the balance beam, or uneven bars, to start the event by springing onto the apparatus. The springboard is usually about 2 feet (0.6 m) wide and 4 feet (1.2 m) long. The number of springs in a springboard depends on the gymnast.

**Uneven bars**



The uneven bars or asymmetric bars are an artistic gymnastics apparatus. It is used only by female gymnasts. It is made of a steel frame. The bars are made of fiberglass with wood coating, or less

Commonly wood.

The English abbreviation for the event in gymnastics scoring is UB or AB, and the apparatus and event are often referred to simply as "bars". The bars are placed at different heights, allowing the gymnast to jump from bar to bar.

Uneven bars used in international gymnastics competitions have to conform to the guidelines and specifications set forth by the International Gymnastics Federation Apparatus Norms brochure. Several companies manufacture and sell bars, including AAI (USA), Jannsen and Fritsen (Europe) and Acromat (Australia).

Gymnasts will often use a single bar to practice skills on the bar, mostly for safety and for ease of spotting.

Dimensions

Measurements of the bars are provided by the Fédération Internationale de Gymnastique (FIG) in the Apparatus Norms brochure.

* Height:
* upper bar: 250 centimeters (8.2 ft)
* lower bar: 170 centimeters (5.6 ft)
* Diameter of bar: 4 centimeters (0.13 ft)
* Length of the bars: 240 centimeters (7.9 ft)
* Diagonal distance between the two bars: 130 centimeters (4.3 ft)–180 centimeters (5.9 ft) (adjustable)

Routines

Evolution

The uneven bars apparatus originally consisted of men's parallel bars set to different heights. Consequently, the bars were very close together, and gymnasts could transition from one to the other with little difficulty. Routines of the early 1950s chiefly consisted of simple circles, kips, and static balance elements and holds. In the late 1950s the trend shifted toward fluid motion, and gymnasts began to perform routines composed of more difficult circles, kips, beats

(bouncing the body off the low bar while hanging from the high bar), wraps (wrapping the body around the low bar while hanging from the high bar) and transitions. Release moves also began to come into play, although they were almost entirely limited to transitions between the low and high bars.

In the late 1960s/early 1970s, companies began manufacturing uneven bars as a separate specific apparatus. The design was changed slightly to allow the bars to be adjustable, with tension cables that held the apparatus to the floor. As a result of this change, coaches could set the bars farther apart. Additionally, the circumference of the bars themselves decreased, allowing gymnasts to grasp and swing from them with greater ease.

As other events in gymnastics increased in difficulty, so did the uneven bars. Gymnasts and coaches began experimenting with elements, attempting more challenging dismounts, and adapting moves from men's horizontal bar. In 1972 Olga Korbut pioneered the Korbut Flip, the first high bar salto release move. Nadia Comăneci continued the trend with her original Comaneci salto at the 1976 Olympics and advanced handstand elements four years later. The giant swing the staple of high bar in men's artistic gymnastics (MAG), was also adopted into the women's Code of Points, and quickly became a basic uneven bars skill.

By the mid-1980s, routines had become so based on swing and release moves that the bars were moved even farther apart. The distance between bars increased even more as gymnasts developed difficult transition elements that required space, such as the Pak salto.

Of all the apparatus in women's artistic gymnastics (WAG), uneven bars is probably the one that has seen the most radical changes. Most elements from 1950s and 60s bars routines, such as the Hecht dismount and the Radolcha somersault, are now completely obsolete and almost never used; others, such as the once-traditional beats and wraps, are impossible given the current diagonal separation between bars; and still others, such as static holds and the Korbut Flip, are not permitted under the current Code of Points.In USAG levels 1-5, everyone in the same level performs the same compulsory routine. In levels 6 through elite, gymnasts make up their own routines within specific requirements.

In Gymnastics Australia levels 1-3 gymnasts have a choice of three routines with different difficulty. In levels 4-6 gymnasts have the option to include more difficult skills in their routines for bonus points. In levels 7 to Elite gymnasts make up their own routines within set guidelines.

International level routines

A routine on the uneven bars must consist of:

* Flight element from high bar to low bar and vice versa
* Flight element on the same bar
* At least two different grips, and a close bar circle element
* Non flight with a turn on the bar, for example turning handstands
* Dismount

Scoring and rules

Judges score routines based on difficulty, form, technique and composition. Deductions are taken for execution errors, poor form, falls, pauses, "empty" swings (extra swings that do not lead into another skill), steps on the dismount, and other mistakes. Falls incur an automatic deduction of 1 full point in the 2009 FIG CoP. Also, if the gymnast hits the low bar with her foot (as Beth Tweddle did at the 2008 Olympics bars qualifications, and Viktoria Komova did at the 2012 Olympics bars apparatus finals), a deduction of 0.5 will occur.

Gymnasts are permitted to tape their hands or use grips or hand guards on bars. Their coaches are also permitted to apply chalk and/or water to the bars to ensure gymnasts don't slip off.

Unlike high bar and rings in MAG, gymnasts may not be lifted to the uneven bars to begin their routines. They may mount the apparatus with either a simple or a difficult skill, on either the high or low bar; running mounts and springboards are permitted.

Once the routine has started, the coach may not physically interfere with the athlete in any way, however he or she is permitted to stand on the mat during release moves and dismounts. If the gymnast falls on one of these skills, her coach is allowed to catch her or break her fall; the coach is also allowed to lift her back to the high bar to continue her routine. If a springboard has been used for the mount, the coach is allowed to quickly step in and remove it so that it does not impede the routine.

If a gymnast falls from the apparatus, she has 30 seconds to re-mount. Within this time limit, she is allowed to readjust her grips or chalk her hands again, if necessary. However, if she does not return to the bars within 30 seconds, she is not permitted to continue her routine.

**Vault (gymnastics)**



The vault is an artistic gymnastics apparatus on which gymnasts perform, as well as the skill performed using that apparatus. Vaulting is also the action of performing a vault. Both male and female gymnasts perform the vault. The English abbreviation for the event in gymnastics scoring is VT.

**The apparatus**

Original vaulting horse configuration (women) Original vaulting horse configuration (men)

Early forms of the vault were invented by German Friedrich Ludwig Jahn. The apparatus itself originated as a "horse", much like the pommel horse but without the handles; it was sometimes known as the vaulting horse. The horse was set up with its long dimension perpendicular to the run for women, and parallel for men. The vaulting horse was the apparatus used in the Olympics for over a century, beginning with theMen's vault in the first modern Olympics and ending with the Gymnastics at the 2000 Summer Olympics.

The horse has been blamed for several serious accidents over the years. In 1988, American Julissa Gomez was paralyzed in a vaulting accident; she died from complications from her injuries three years later. During warmups at the 1998 Goodwill Games, Chinese gymnast Sang Lan fell and sufferedparalysis from a cervical-spine injury. In a series of crashes when the horse's height was set too low at the 2000 Olympics, gymnasts either rammed into the horse's front end, or had bad landings after having problems with their hand placements during push-off.

Following the 1988, 1998 and 2000 problems, International Gymnastics Federation (FIG) re-evaluated and changed the apparatus, citing both safety reasons and the desire to facilitate more impressive acrobatics.

The 2001 World Artistic Gymnastics Championships were the first international competition to make use of the "vaulting table", an apparatus made by Dutch gymnastics equipment company Janssen-Fritsen since the mid-1990s. It features a flat, larger, and more cushioned surface almost parallel to the floor, which slopes downward at the end closest to the springboard; gymnasts nicknamed it the "tongue"; it appears to be somewhat safer than the old apparatus.

In 2007, Dutch junior gymnast Imke Glas was seriously injured after a fall on a vault.

Dimensions



Modern vaulting table

* Length: 120 centimeters (3.9 ft) ± 1 centimeter (0.39 in)
* Width: 95 centimeters (3.12 ft) ± 1 centimeter (0.39 in)
* Height:
* Men: 135 centimeters (4.43 ft) ± 1 centimeter (0.39 in)
* Women: 125 centimeters (4.10 ft) ± 1 centimeter (0.39 in)
* Run up area:
* Length: 2,500 centimeters (82 ft) ± 10 centimeters (3.9 in)
* Width: 100 centimeters (3.3 ft) ± 1 centimeter (0.39 in)

Routines



To perform a vault, the gymnast runs down a runway (the run), which is usually padded or carpeted. They hurdle onto a spring board and spring onto the vault with their hands (the preflight or first flight, and block). For vaults in the Yurch enko family, the gymnast will put their hands onto a mat that is placed before the springboard, round-off onto the board and do a back handspring onto the vault. The off-flight may be as simple as leaping over the apparatus or as complicated as executing several twists and turns in the air. The gymnast then lands on the mat on the other side of the apparatus.

Scoring and rules

Gymnasts are expected to land cleanly, with no hops or steps, and within a set landing zone on the landing mat. They must also demonstrate good technique and execution in the actual vault. Falling or stepping on landing incurs deduction, as will lack of height off the table, or distance from the table.

Gymnasts (both male and female) show one vault in Qualification, Team Final, and All Around Final. In the Apparatus Finals gymnasts must show two vaults. For men, the two vaults must be from different element groups, while women must show two vaults with different repulsion from the vault table.

**Apparatus specific rules**

Yurchenko-style vaults must be performed with a safety collar placed around the springboard. If the collar is not used, the vault is considered invalid and the gymnast will receive a score of zero.

Every vault is assigned a specific number; this number is displayed on a board or electronic screen before the gymnast begins. Gymnasts will be penalized if they fail to show the number of their intended vault, though there is no penalty if the vault ends up being different (e.g. not performing enough twists).

If a female gymnast balks, for example stops in the middle of the runway or breaks their run before touching the springboard, no deductions are taken. The gymnast is given thirty seconds to return to the end of the runway and make a second attempt at the vault. If, however, the gymnast touches any portion of the springboard or vault itself, they receive a score of zero and may not make another attempt. Ekaterina Kramarenko touched the vault and was given a zero during the team final at the 2007 World Championship. Male gymnasts receive a score of 0 if they do not vault once they start running. Both male and female gymnasts receive a score of 0 if they fail to land on their feet first.

Receiving spotting assistance from a coach, or not touching the vault table will result in a score of 0. Vaulting before the judge has signaled the gymnast can vault once also resulted in a score of 0; this deduction has since been removed. An example of this would be at the 2008 Summer Olympic Games to Anna Pavlova during the Vault event final on her second vault.

Judging and scoring

Because the vault is completed so quickly it helps if there are cameras to play back in slow motion if they are unsure or if all the judges have a wide range of scores. It is the head judges' job to make sure all the scores are within a certain range, usually 0.2 point range difference. Judges look through four main phases: the pre-flight, support, after-flight and landing. The overall vault of a gymnast should have power, speed, while being explosive and precise as possible.

Within the two vaults women perform, they receive a combined average score of the two. Scoring has become very different in these past years. No event is scored out of ten. The new system was designed in 2005, where the judges are looking for the difficulty of the routine and the amount of executions made combine to gather the final score. The difficulty is added with every skill performed, as each skill has its own value, the harder the skill the higher the start value. The execution is out of 10.0, looking at the form, height, length and the landing. Then in 2009, FIG made some changes to try to put less pressure on the difficulty and shorten the amount of skills required, making the gymnasts focus harder to perfect minimizing executions.

**Vault families**

Vault styles are broken into various groups. The group a vault style fits into is determined by the action performed during the vaulting movement.

**Vault groups (men)**

* There are five vault categories for men:
* Direct vaults
* Vaults with 1/1 turn in the first flight phase
* Handspring and Yamashita style vaults
* Vaults with 1/4 to 1/2 turn in the 1st flight phase (Tsukahara)
* Round off entry vaults (Yurchenko)

**Vault groups (women)**

There are five vault categories for women:

* Handspring, Yamashita, round-off with or without longitudinal-axis (LA) turn in 1st and/or 2nd flight phase
* Handspring forward with/without 360° turn in 1st flight phase, salto forward with/without LA turn in 2nd flight phase
* Tsukahara style vaults
* Yurchenko style vaults
* Round-off with ½ LA turn in 1st flight phase, salto forward