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EFFECTS OF GYMNASTICS ON MOTOR CHARACTERISTICS

Abstract: Gymnastics is the mainstay of sports. With basic forms of movement, it includes walking, running, jumping, turning, etc. It is an area that allows you to train locomotor and balance skills and develop spatial awareness by developing various movement skills by exercising all the joints and muscles of the body. In this regard, gymnastics makes a great contribution to preparing children for all kinds of sports and, most importantly, for life.
Key word: Reflex, Cycles of motor development, Maximum cyclic speed, Speed of movement, General coordination

Enter

In order to live a quality and healthy life, people need to take action. Simple movements that begin with reflexive movements in the womb are replaced by more complex movements over time. It is known that childhood is the period when growth and changes in the body happen the fastest. This period is also the period when the body is most affected by external factors. A person's regular physical activity from a young age not only creates a healthy physical structure, but also delays the deterioration of this structure in old age.

The healthy development of future generations is a desirable feature of all societies. Healthy growth and development parallel genetic factors as well as environmental and living conditions.

It is believed that gymnastics is important for preschool children. Activities that provide movement in age groups and special studies programmed according to these age periods are assumed to have a positive effect on the natural development of children. It can be said that gymnastics is an important sports discipline that requires continuous continuity, determination, passion, skill and discipline and brings with it mental strength as well as physical strength. With basic gymnastics training, children will gain body awareness, balance, coordination and flexibility, which will provide a solid foundation for any sport they play in the future. However, it is said that basic gymnastics exercises play an important role in the motor development of children. It can be said that the starting age for practicing gymnastics is 3-4 years old, and regular basic gymnastics training for a child has a positive effect on the child's physical development. Movement properties are activated to provide the human body with motor movements that require strength, endurance, speed and skill.

Main engine characteristics; Strength, endurance, speed, mobility, and coordination can be present at birth, but they can also develop at a later age.

There are 7 branches of gymnastics organized by the International Federation of Gymnastics (FIG). These are Rhythmic Gymnastics, Rhythmic Gymnastics, Aerobic Gymnastics, Trampoline Gymnastics, Acrobatic Gymnastics, Gymnastics for All and Parkour included in 2019. Rhythmic gymnastics, rhythmic gymnastics and trampoline gymnastics are among the Olympic disciplines, while aerobics, parkour, acrobatic gymnastics and gymnastics are newly developing in our country and are not Olympic sports. Gymnastics for everyone, on the other hand, is an exhibition organization, in which only demonstrations are held and everyone can participate without the goal of competition.

Motor Development: Emphasizing that it is time for the body to acquire, balance, and reduce motor skills; In the same process, he explained the importance of growth, maturity, readiness and learning. Physical development of a person begins before birth and continues to grow in the subsequent period. Motor development occurs after physical development occurs. previously formed as a reflex

Some of the movements continue throughout life as reflexes, while some become motor skills over time with proper use of the organs. At the core of motor development as an academic discipline is content related to views and principles related to growth, development, and motor movement.

At the end of general motor development, a person's progress in movement skills is determined. Parameters such as strength, speed, coordination, balance and agility can be improved with training programs designed to improve motor skills.

Currently, the development of motor skills is given great importance and time. Although the development of motor skills depends entirely on the opportunity, motivation and training provided to the individual, it is fully accepted that these skills do not develop by themselves.

Cycles of Motor Development: Gallahue thought of "motor development" as a stage that begins in utero and continues into adulthood, and created a four-stage model. Each period consists of different stages.

Cycles of engine development

- Period of reflexive actions (0-1 years)
- The period of primitive movements (1-2 years old)
- Period of basic movements (2-7 years)
- Period of sports-related activities (7 years and older)

Period of reflexive movements (0-1 years): Reflexive movements occur during this period. It is observed in all fetuses and babies. Thanks to reflexes, the baby collects all the information about the environment and recognizes its body. Primitive reflexes that occur during reflexive movements (sucking, searching, grasping, plantar flexion, Babinski, etc.) provide more nutritional and protective functions, while reflexive movements associated with posture (stepping, crawling, pulling, parachute, support, etc.) is like a voluntary behavior and helps the body to stand upright.

Period of primitive movements (1-2 years): With the development of the central nervous system, control is provided primarily by the head and trunk, and secondly by the arms and legs. Primitive movements, known as the first step of voluntary movements, are observed at the age of 0-2 years. A child's ability to stand, crawl, and sit on its own shows the importance of maturity in its development. In addition to bone, muscle and nervous system development in the first two years of life, a child's movements result from the exercise opportunities that parents provide for their babies. Although primitive movements parallel maturation, they follow a predictable sequence in their emergence. Under normal conditions, this sequence does not change, but the appearance and speed of these movements may differ in each child. Genetic and environmental influences form the basis of these changes .

Period of basic movements (ages 2-7): This is a period of increased motor development that occurs in early childhood. Here the child reveals the ability to move his body; By using body parts and the coordination between them, they acquire different and complex skills. During the period of basic movements, the child develops balance, locomotor and manipulative movement parameters and learns to perform movements first one by one, and then simultaneously. The period of basic movements creates not only the main characteristics of the movements, but also their individual styles and characteristics. Movement models are examined one by one and combinations of these movements are revealed and movements such as running, catching, throwing, kicking, jumping and rolling are combined. Movements form the basis of many sports networks. For example; Throwing something forward is a basic movement in sports like volleyball or tennis. The development of skills paves the way for sports activities.

Sports-related activities period (7 years and above): This stage is a continuation of the basic activities period. Actions in this part are goal-oriented. The skills acquired during the main activities can be combined with the rules and become joint activities. Explain with an example; Jumping and jumping skills learned during basic movements can be translated into a structured jump rope game that requires cooperation in this section.

The characteristics of the movement period associated with sports are;

- A high rate of growth is observed in achievement until adolescence.
- In order for the level of motor development to be perfect, it is important that basic movement skills are at their maximum.
- When starting to engage in sports activities aimed at ensuring the child's development, it is necessary to review the period of basic movements and work on mature movement skills.
- In order to acquire sports skills in the body, it is necessary to pay attention to the period of basic movements. During this time, skills should be consciously taught to the child.
- Coaches should prepare training programs based on the ability and development of athletes.
- Competitions can be organized for the motivation needed for athletes to master these skills very well and perform them perfectly.

Competitions are of great importance in the life of athletes. Success in competitions depends on experience.

Effects of gymnastics on motor characteristics

Nowadays, when technology is a complete part of life, children's mobility is limited to computer games, TV and phones.

Children's desire to be in constant motion, which is necessary for their physical, mental and emotional development, is consciously or unconsciously inhibited.

Children who play sports regularly develop personally and physically. Gymnastics plays an important role in the physical and motor development of children.

Regular participation in physical activity, gymnastics or training benefits body mass (body weight, fat to muscle ratio), bone mineralization and density, muscle development and strength, and cardiorespiratory system development. If gymnastics is done systematically, the body will remain physically healthy. This fitness improves endurance, muscle strength, flexibility, body composition and cardiovascular system. movements such as falling. equipment. All movements that make up gymnastics contribute to the child's cardio-respiratory system, muscle strength and endurance.

Various bridging exercises using different parts of the body, jumping exercises and stretching exercises to cool down the body at the end of the training will help improve the flexibility of the body.

In addition, regular participation in programmed training or physical activity ensures that athletes become healthy individuals. Being healthy is important in child development. This can be achieved almost with gymnastic exercises. As a result of research; The need for physical activity is understood and it has been shown that people who exercise in a programmed way have fewer health problems in later life.

Motor characteristics

Motor characteristics are strength, endurance, speed, flexibility and dexterity. The driving factor for success in all sports is the characteristics of the equipment required for the sport being used. Motor characteristics vary depending on the body's mobility and efficiency level. It is not acquired, it is innate and developed. The development of these characteristics occurs after a regular training program. It is determined by tests and strength checks that determine the level of development. The development of basic motor skills in all areas of sports is parallel to the training program that we implement.

Strength: It is the ability to resist resistance. It occurs as a result of the interaction of internal and external forces. Muscles, the strength of muscles and the contraction of these muscles create internal force, while the force between the surfaces of gravity and friction caused by the interaction of external factors creates external force. However, with a conscious reduction. nervous system, strength reaches the highest level that the athlete can achieve and exceeds his capabilities. It is expressed as weight lifting.

Strength in sports

General strength: This refers to strength that considers the muscles as a whole and includes many muscles and muscle groups without specifying a specific branch. It includes training programs for developing the strength of all muscle groups of individuals who are new to the sport. If general

strength, which is a prerequisite for specific strength, is not sufficiently developed to allow a person to perform effectively, it will adversely affect the athlete's development and performance.

Specific strength: This refers to the strength required by a particular sport and the sport. This ensures the development of strength for movements related to the main features of the performed sport, not all muscle groups of the body. Training programs that include special strength begin with studies leading to the professionalization of sports and athletes at the end of the preparatory period.

Endurance: This is the ability of athletes to resist external stimuli for long periods of time. The ability of the whole organism or its systems to resist fatigue is psychological endurance. However, it depends on variables such as the speed, strength, ability and mental makeup of the athletes. While it includes fatigue, it plays a big role not only during the load, but also during the recovery period of the body after the load. Ages 4-14 and older are known as the period when endurance is most severe.

Speed: An important part of many sports, speed plays an important role in determining and improving the body's efficiency. It is the ability of a person to move his body or all his limbs in a short period of time or to achieve a goal. Speed consists of characteristics such as reaction, perception, and speed of movement that contribute to an athlete's success. The speed of muscle contraction depends on the amount of energy released in the muscles.

The speed that occurs when the nervous and muscular systems harmonize with each other is directly related to the frequency of movement. Speed development is limited. However, an athlete's performance can be improved with a regular training program. It develops faster with age. The movements of preschool children are slower and heavier. At the age of 5-7, speed can be observed along with movement, and at the age of 6-9, speed is the fastest developing period. After that, the child's reaction speed increases significantly until the age of 13. When a child is between the ages of 14 and 18, his speed is at its peak and he is at his best in terms of performance. However, speed; They differ according to the specific characteristics and physiological characteristics of the sports network.

Speed according to the characteristics of the sport

Reaction speed: includes the time from the appearance of the stimulus to the contraction of the muscles, when the first sign of movement from this stimulus appears.

Maximum Irreversible Velocity: Irreversible movement velocity is expressed as the contraction and relaxation of a muscle over a period of time. It is seen in sports such as wrestling, jumpers, boxing, sports games and shot put, where it is impossible to maintain the same rhythm from the beginning of the movement to the end.

Maximum Cyclic Velocity: It is found in sports such as swimming, canoeing and rowing, all of which follow the same course. The main thing is that the rhythm of movement during training is at an optimal level. The interval between muscle contraction and relaxation should be long.

Power Speed: This is the speed that occurs despite high resistance at maximum revs and maximum constant speeds. The rate of force generated during shooting is an example of irreversible velocity, and the rate of force applied during rowing is an example of cyclic velocity.

Speed according to physiological characteristics

Sensory Velocity: This is the process by which a stimulus is detected by the sense organs and then sent to the brain where it is interpreted.

Reaction time: the time at which a muscle's response to a stimulus is initiated by the onset of a stimulus and the first movement to that stimulus.

Velocity: This is the body's process of starting and ending a movement.

Acceleration Rate: This refers to all the changes you make in the speed itself. After seeing the difference between the initial speed and the final speed, the result is obtained by dividing it by time.

Average Speed: This shows the average speed over the distance. It is calculated by dividing the movement speed by meters. Average speed= Distance/Time=m/5.

Max Speed: The speed reaches the highest point. In sports where high speed is required, achieving maximum speed and not losing speed is essential for the athlete's performance.

Flexibility

Wide flexion angles in children are due to weak skeletal and muscular systems. Therefore, it was observed that children have a large range of motion. In the first stage of the process of structural changes (age 5-6), stretching and growth of limbs occurs, and the bone system has not formed strong connections, targeted training can be dangerous in some ways . It is healthier not to do extra work to increase range of motion at this stage.

Aims to increase range of motion with exercise programs at later ages. The reason for this is the range of motion; Loss of range of motion is caused by decreased flexibility of muscles, tendons, and ligaments, decreased cell number with age, loss of body water and decreased flexibility, and increased muscle mass. As we age, the number of cells in muscles, tendons, and ligaments decreases, water loss and flexibility decrease, and range of motion decreases as muscle mass increases. Range of motion improves with regular exercise. It is necessary to expand the angles of movement.

Classification of flexibility

It is divided into two according to the type of sport and stretching methods:

Flexibility by sport

General Flexibility:

It is not branch specific. It includes studies on the angles of motion of body parts such as the shoulders, hips, and spine. Special flexibility: The condition for the formation of the necessary movements includes the mobility and angles related to the specific joints, which are formed according to the main characteristics of the applied branch.

Flexibility according to stretching methods:

Active flexibility: this is the mobility of joints that literally benefit from the strength of their own muscles, without any assistance from the athlete.

Passive flexibility: Joint mobility occurs when the athlete is assisted by someone or a device.

Dynamic flexibility: this is the active twisting, swinging, or repetitive stretching or pulling of a joint in a rhythmic fashion without stopping and providing a range of motion.

Static flexibility: These are exercises that ensure that this position is maintained after a certain angle of movement is formed and maximum flexibility is achieved.

Coordination

In the interaction of skeletal muscles and the central nervous system, programmed movements for a specific purpose are regularly performed. However, the performance of an athlete is affected not only by conditioning characteristics or metabolic processes, but also by psychoneurological factors. The human body as a whole has a complex structure. The functions of organs and systems are regulated and coordinated through the central nervous system. However, when performing network-specific actions, physiological, neural, sensory, and motor properties continue to act in concert with each other, and thus coordination occurs.

Coordination plays a very important role in defining the techniques in the network, and it also reveals that these actions are fast, efficient, safe, aesthetic and harmonious. Perfect coordination depends on the physical laws that determine the movement, the level of development of the agonist and antagonist muscles that ensure the movement, and the harmony of the vestibular balance organ located in the ear. In addition, muscles also include coordination factors based on the cooperation of morphological and functional abilities.

Classification of coordination: It is divided into general and special coordination. However, it is divided into subheadings such as closed, open, combined, coarse and fine coordination.

Coordination by sport

General Coordination: This is coordination that involves the whole body and is for all sports without being specific to a specific sport. This sets the stage for special coordination. Once general coordination is improved, performing specific coordination exercises will benefit the athlete's performance.

Special coordination:

The goal is to apply the branch's unique core characteristics and technical skills by creating a tailored curriculum.

Motor skills

This means that a person is experienced and fully skilled in a subject. To implement this form of movement, it is necessary to learn. For example, walking and running are easy for adults, but skills are important for a 14-month-old baby. In this context, a motor skill can be defined as "a series of actions performed correctly as a result of a combination of experience and learning." Studies focusing on the acquisition and development of motor skills are useful. Due to these studies, the necessary wishes and needs of the child are met.

Motor Learning: This refers to increased performance gains as a result of mastering movements developed through experience. The fact that the skills acquired by the body by repeating them many times supports the understanding of the achievements to be learned, which is useful for motor learning and facilitates the process.

Development of gross (Cross) motor skills

Gross motor development is a condition in which many parts of the child's body are in motion at the same time. For example; Gross motor skills include crawling, walking, running, jumping, or jumping. All skills related to walking and postural control develop during infancy. Although the neural pathways involved in a child's walking are formed much earlier, babies usually learn to walk by the age of one. Each child may have individual differences in this skill stage. The period when a child develops gross motor movements such as running, jumping, grasping an object, etc. is parallel to the period of basic motor movements.

Fine motor development: These are skills that are completely independent of each other and involve very small movements. This includes skill exercises such as the child passing a toy from one hand to another, trying to write or draw using hand-eye coordination. Skills such as tying a net, tying a belt, shaping a piece of clay, cutting an object with scissors ensure that children work their small muscles in a coordinated manner. The development of these skills is mainly observed in preschool age. While a child's ability to hear, see, smell, taste, and touch at an adult level begins in early childhood, preschoolers can take off their clothes and tie their shoelaces, which and provides important skills in use. consists of small muscles. For example, a four-year-old child can perceive and understand detailed situations in pictures and use his perceptual skills to coordinate his pictures with body movements. In order to have hand-eye and muscle coordination, it is important that the movements are in harmony with each other and move in a coordinated manner.

By the age of three, children can hold some small objects for a short time using their index finger and thumb. But this does not indicate that fine motor skills have improved. For example, if they see the right place to insert a broken puzzle piece, but can't place it, they usually try to force it into place or end it by hitting hard. Four-year-old children arrange toy blocks and try to build a tower. By age five, their motor skills are more developed and they can move their bodies in a coordinated manner. Clear and rapid development of fine motor development occurs mainly in early childhood. They can draw with finger paint, put on and take off their own shoes, spread food on bread using the right knife, and make drawings about the human body. In addition, they can use their senses and coordinate their hands and feet and write some letters or names.

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