Unit – 5

Children and Women in Sports

Motor development and factors affecting it

Meaning of motor development: Motor Development means the development of movements and various Motor abilities from birth till death. It is a progressive change in movement throughout the life cycle.

Motor development can be divided into two types:

- Gross motor development: It involves the development of large muscles in the child's body such as sitting, walking, running, climbing etc.
- Fine motor development. It involves the small muscles of the body especially in the small movement of the fingers and hands. For example, holding of javelin, discus, pole, catching a cricket-ball, smashing a volleyball and gymnastic exercise with or without apparatus etc.

Motor development in children: Motor development in children can be studied effectively under the following three stages of childhood.

- Early childhood (3 to 6 years): Motor development during this period takes place rapidly. This stage is also known as the preschool years. In this period, a child becomes perfect in various fundamental movements such as running, jumping and throwing and acquires the ability to unite these movements. Stride length increases and they develop a more mature running pattern. The systematic training of children in various sports such as gymnastics and swimming can be started because their basic movements like rolling, hanging, pushing, pulling, etc., become efficient.
- Middle childhood (7 to 10 years): During this period children become active and agile. Children have a desire to compete with children of their age group. During this period, most of the children achieve a mature pattern of fundamental motor skills. Their posture and balance become better. The same movement is performed differently for different aims such as jumping for distance or height, throwing for

distance or height, etc. They become efficient in movement coupling, movement precision and movement flow. The speed-related abilities and coordinative abilities develop at a faster rate whereas flexibility develops at a very slow rate. During this period rules should be flexible, instruction time should be short and there should be minimum competitions. Stress should be given on movement correction.

- Late childhood (11 to 12 years): During this period strength begins to differ but the differences are small. Most of the children master most intricate or complex motor skills. They are ready to learn strategies and more complex play combinations. Running and jumping movements, qualitatively as well as quantitatively, develop at a faster rate than in the middle childhood period. Coaches or teachers of physical education should continue to encourage skill development with increasing stress on strategies and tactics.

Factors affecting motor development:

- Heredity: Children get 'genes' for all the developments from their parents. It has been seen motor development of a child follows the same pattern as of their parents. These factors are related to body weight, size and strength.
- Environmental Factors: Environmental factors such as physical and social factors are likely to affect motor development. Encouragement, love and security help the child to take a risk to explore fearlessly which leads to better motor development. Those children, who are not encouraged or motivated towards motor activities have a slow rate of motor development.

- Nutrition: Nutritive food promoter good motor development. If they get nutritive food, they get stronger & their development is good. If they don't get the proper nutrition they are found to be less energetic & their motor development has taken place slowly.

- Physical Activities: Those children, who do not perform or practise physical activities regularly their motor development becomes slow. However, physical activities must be according to the capabilities of children.

- Opportunities: Children who get more opportunities to perform more activities, motor development is better in them. Opportunities to play give a better chance of developing sensory-motor activities. If proper opportunities are not given to children their motor development cannot take place in those children properly.

- Disability and Disease: Disability and disease affect motor development. It reduces perfection in motor skills whereas a healthy person gains faster motor development.

- Body Weight: Overweight and obese children have less motor development whereas healthy child has more skill perfection.

- Mental Ability: Motor development depends upon mental level, thus small children have less perfection.

- Regular Practice: With regular practice, motor development and perfection are gained.
- Immunisation: If the mother and child both are immunized at a proper time it leads to good sensory-motor development.

Exercise guidelines at different stages of growth and development:

There are the following guidelines related to exercise or physical activity in various stages of growth and development.

- Infancy (1 to 2 years): During this stage, gross motor activities or exercises should be promoted. Exercise to develop head control, sitting, crawling, etc., should be encouraged. They should be provided objects, toys and games that encourage them to move and do things for themselves. They should be provided with a safe environment for performing these activities or exercises. Watching TV and other electronic media should be avoided. They should be encouraged to walk. Simple exercises like throwing,

catching and kicking a ball may be the most suitable exercises during this stage.

- Early childhood (3 to 7 years): Emphasis should be laid down on participation and not on competition. During this stage, activities related to fine motor skills, i.e., coordinative abilities should be emphasised. Re-creative as well as enjoyable methods should be used to encourage them for participation in various physical activities. Stress should also be laid on a clean and safe environment during this stage of growth.
- Later childhood (8 to 12 years): During this stage of growth and development children should indulge in activities such as stunts, throwing, jumping, catching, and running, etc., so that they can acquire body control, strength and coordination. Activities related to endurance should be avoided. They should involve in team games which aim to develop social-consciousness in them. They should be introduced to competitive sports and taught the basic rules of sports competition, i.e., enjoying the game, fair play, simple strategies and tactics. They can also be introduced to the concept of sports training and the exercises that build endurance (aerobic exercises like running, swimming and cycling, etc.), strength (resistance exercises) and agility, coordination and balance (fast work and rapid movement exercises).
- Adolescence (13 to 19 years): During the stage of adolescence, moderate to vigorous-intensity exercise/physical activity is recommended. They should indulge in muscle strengthening exercises and should also include bone-strengthening exercises. They should reduce sedentary behaviour. Physical activity or exercise such as running, gymnastics, push-ups, jumping rope, playing hockey, basketball, swimming, tennis and resistance exercises (weight training) should be included.
- Adulthood (above 19 years): They should do brisk walking, bike riding, dancing and swimming with moderate intensity and also indulge in running, aerobic exercises, weight training, push-ups, sit-ups, etc., for muscle

strengthening. They should perform resistance exercises to tone their muscles and bones.

Common Postural Deformities

Various types of postural deformities are:

Spinal curvature: This type of deformity is related to the spine. The normal lumbar spine is characterised by a moderate anterior hyperextension curve when views laterally. There is no absolute standard for the determination of the degree or extent of the anterior convexity of the normal lumbar curve. There are three types of spinal deformities.

- Kyphosis: An increase or exaggeration of a backward or posterior curve. It is also called round upper back. Depression of the chest is common in kyphosis.

Causes of Kyphosis: It is caused by malnutrition, illness, crowded areas, carrying heavy loads on shoulders, shyness among girls, the habit of doing work by leaning forward, etc.

Precautions: They should teach appropriate posture of sitting, standing and walking. Proper and adequate exercise is not only helpful in maintaining proper posture but also controls the problem of kyphosis.

Remedies: The following exercises should be performed for the remedy of kyphosis.

1. Always keep pillows under your back while sleeping.
2. Bend your head backwards in standing position.
3. Perform dhanurasana, the yogic asana regularly.

- Lordosis: It is the inward curvature of the spine. It is an increased forward curve in the lumbar region. It creates a problem in sitting and walking. The body seems to be stiff.

Causes of lordosis: imbalanced diet, improper environment, improper development of muscles, obesity and diseases affecting vertebrae and spinal muscles are the causes of lordosis.

Precautions: Balanced diet should be taken. Obesity should be kept away especially in early age. The body should be kept straight while carrying weight. Excessive intake of food should be avoided.

Remedies: The following exercises should be performed for the remedy of lordosis.

1. Perform sit-ups regularly.
2. Lie down on your back and raise your head and legs simultaneously for 10 times.
3. While maintaining a standing position, bend forward from hip level.
4. Toe touching exercises should be done for at least 10 times.

- Scoliosis: postural adaptation of the spine in the lateral direction is called scoliosis. These are sideways curves and may be called as scoliotic curves. These curves are identified as either convexity right/right convexity. A simple curve to the left is commonly called a 'C' curve. Scoliotic curves may be found in 'S' shape.

Causes of scoliosis: The main causes of scoliosis are diseases in the joints of bones, under-developed legs, infantile paralysis, rickets, carrying heavy loads on one shoulder, unhealthy conditions and wrong standing posture.

Precautions: balanced diet should be taken. Studying should be avoided in a sideways bending position. Avoid walking for a long time while carrying weight in one hand.

Remedies: Scoliosis may be remedied by doing the following exercises.

1. Bending exercises should be done on the opposite side of the 'c' shaped curve.
2. Hold the horizontal bar with hands and let your body hang for some time.

3. Hold the horizontal bar with your hands and swing your body to the left and right sides.
4. Swim by using breaststroke technique.

- Flatfoot: A condition in which the foot has an arch that is lower than usual. They face problem while standing and walking. It is easy to observe whether a person has flatfoot deformity or not. Dip your feet in the water and walk on the floor if there is not a proper arch of footprints on the floor then you have the deformity of flatfoot.

Causes of flatfoot: The main cause of flatfoot is weak muscles. Weak muscles of the foot cannot bear the body weight. Hence the foot become flat or without arches. A rapid increase in body weight, improper shoes, and carrying heavyweight for a longer period are also the causes of flatfoot.

Precautions: The shoes should be of proper shape and size. Don't walk bare feet for a long duration. Obesity should be avoided. Don't force or encourage babies to walk at an early stage. High heeled shoes should be avoided.

Remedies: The following exercises should be done to rectify or treat flatfoot deformity.

1. Walking on heels.
2. Walking on the inner and outer side of the feet.
3. Walking on toes.
4. Stand up and down on heels.
5. Jumping on toes for some time.
6. Skip on the rope.
7. Perform Vajrasana, the yogic asana.

- Knock-knees: Knock-knees is one of the major postural deformities. In this deformity, both the knees knock or touch each other while in a normal standing position. The gap between the ankles goes on increasing.

Causes of knock-knees: The lack of a balanced diet, especially vitamin D, calcium and phosphorus are the main cause of knock-knees. It may also be caused due to

rickets. Chronic illness, obesity, flatfoot and carrying heavyweight at an early age may be other possible cause of knock-knees.

Precautions: balanced diet should be taken. Babies should not be forced or encouraged to walk at an early age.

Remedies: to rectify or treat this deformity, the following points should be taken into consideration.

1. Horse riding is the best exercise for remedying this deformity.
2. Perform Padmasana and Gomukhasana regularly.
3. Cod liver oil may be beneficial in reducing this deformity.
4. Keep a pillow between the knees and stand erect for some time.
5. Use of walking callipers may also be beneficial.

- Bowlegs: It is opposite to knock-knees position. If there is a wide gap between the knees when standing with feet together, the individual has bow legs. Knees are wide apart.

Causes of bow legs: The main cause of bowlegs is the deficiency of calcium and phosphorus in bones. The chances of bow legs also increase when children become overweight.

Precautions: don't let the children be overweight. Don't force or encourage babies to walk at an early age. A balanced diet should be given to children. There should not be any deficiency of calcium, phosphorus and vitamin D in the diet.

Remedies: The following measures should be taken for the remedy of bow legs.

1. Vitamin D should be taken in the required amount.
2. A balanced diet should be taken.
3. Bowlegs can be corrected by walking on the inner edge of the feet.
4. One should walk by bending the toes inward.

- Round shoulders: The shoulders become round and sometimes they seem to be bent forward.

Causes of round shoulders: Round shoulders may be due to heredity. Sitting, standing and walking in a bent position may also result in round shoulders.

Wearing very tight clothes can lead to round shoulders. Sitting on improper furniture, lack of proper exercise especially of shoulders and becoming habitual to press the chest at the time of bench press may cause round shoulders.

Precautions: Don't sit, walk or stand in a bent position. Avoid tight-fitting clothes. Avoid sitting on uncomfortable furniture.

Remedies: The following exercises should be done for the remedy of round shoulders deformity.

1. Keep your tips of fingers on your shoulders and rotate your elbows in the clockwise and anticlockwise direction.
2. Hold the horizontal bar for some time.
3. Perform Chakrasana and Dhanurasana regularly.

Corrective measures for postural deformities

Postural deformities are of two types:

1. Structural deformities: Structural deformities occur when our bony structure is affected. Physical activities and other corrective measures in such cases cannot play any significant role. In such cases, surgery can help secure the desired improvement.
2. Functional deformities: In functional deformities, only the soft tissues, i.e., the muscles and the ligaments are affected. The correction of postural deformities is possible through various corrective measures.

The role of physical activities as well as other corrective measures in functional deformities is very effective, especially during elementary school years. The correction of postural deformities should be a part of school education. The programme for the correction of postural deformities in a school should be included to serve more than just an exercise for correcting a specific deformity.

There are several physical activities which can be used as a corrective measure for postural deformities. Various corrective measures related to specific postural deformities are:

- Corrective measures for a kyphosis: To cure kyphosis such types of exercises are suggested, those increase the length of the pectorals and provide strength to the thoracic region muscles such as :

1. Backstroke swimming.
2. Chakrasana
3. Bhujangasana
4. Dhanurasana
5. Reverse bending on the swiss ball
6. Reverse butterfly
7. Pillow back extension
8. Ustrasana (Camel Pose)
9. Half wheel pose (Ardha chakaarasana)

- Corrective measures for lordosis:

    1. Salvasana
    2. Perform half-squat
    3. Forward lunging
    4. Bhujangasana
    5. Halasana
    6. Karnapidasana

- Corrective measures for scoliosis:

    1. Sideward bending
    2. Ardh-chakrasana
    3. Pull-ups
    4. Swim by breaststroke technique
    5. Using horizontal bar swing your body

- Corrective measures for knock-knees: the deformity of knock-knees cannot be corrected through exercise during later childhood and adulthood. But, this deformity can be corrected up to some extent through exercises, particularly when it is detected.

1. Horse-riding is one of the best exercises for correction of knock-knees.
2. Keep a pillow between the knees and stand straight for some time. Both the feet should touch each other.
3. Use of walking callipers may be beneficial.
4. Perform Padmasana and Goumukhasana regularly.

- Corrective measures for bow legs:

1. Stand erect with feet joined together. Wrap a soft piece of cloth on both legs at knee level. Tighten it with the help of a partner. Try to squat as far as possible. Hold that position of the squat for some time. Come to the original position and repeat the exercise 4 to 6 times.
2. Walk for some distance on the inner edge of the feet.
3. Walk by bending the toes inward.
4. Perform ardhmatseyendrasana, garudasana and ardha chakrasana.

- Corrective measures for round shoulders:

1. Keep your tips of fingers on your shoulders and rotate your elbows in clockwise and anticlockwise directions for some time.
2. Hold the horizontal bar regularly for some time.
3. Perform chakrasana and dhanurasana for some time.

- Corrective measures for flatfoot:

1. Jumping on toes for some time.
2. Rope skipping.
3. Stand up and down on the heels.
4. Walk on toes.
5. Sit down properly. Try to grip small wads of paper with your toes.

Sports Participation of Women in India

Sports Participation of women means women Participation in the field of sports and games. In 1952 Olympic Games, the first India women took part. In 2000 Olympic Games, Karnam Malleshwari (weightlifting) become the first Indian women to have won a bronze medal.

Reasons for less participation of women in sports:

- Lack of legislation
- Lack of time
- Lack of self-confidence
- Male-dominated cultural of sports
- Lack of interest of spectators
- No media coverage of women's sports
- Lack of female sportsperson as role models
- Lack of fitness & wellness movements
- Lack of awareness among women

- The attitude of society towards women's sports participation
- Lack of personal safety

Special consideration

Menarche: Menarche is the first period or first menstrual bleeding that a young girl has. It usually occurs at the age of 12, it can happen as early as during 8 or 9 years of age or as late as during 16 years of age.

Menstrual dysfunction: Menstrual dysfunction is a disorder or irregularity in women's menstrual cycle. It can be defined as 'abnormal bleeding' during the menstrual cycle. Normal menstrual cycle varies from 21 to 35 days.

Female athlete triad (osteoporosis, amenorrhoea and eating disorders)

Female athlete triad is a syndrome in which osteoporosis, amenorrhoea and eating disorders are included. It is simply known as 'triad'. It is a syndrome of three interrelated conditions. Symptoms of the triad: the symptoms of the triad may include fatigue, frequent injuries, loss of endurance and power, irritability, increased healing time for injuries, enhanced chances of fracture, cessation of menstruation, low esteem, etc.

Osteoporosis: Osteoporosis refers to decreased bone mineral density. It is a skeletal disorder. There are various factors which usually lead to osteoporosis among women athletes.

- Insufficient calcium in diet:-The main cause of osteoporosis is the intake of insufficient calcium in the diet. 100 mg calcium should be included in daily diet by a woman athlete. In addition to calcium, vitamin D should also be included because it is essential for absorbing calcium in our body.
- Amenorrhoea: Women suffering from menstrual dysfunction or Amenorrhoea for more than 6 months are likely to face osteoporosis because the secretion of the hormone called Oestrogen is decreased in those women. This hormone is necessary for the absorption of calcium in our body.
- Eating disorder: - Eating disorder like anorexia and bulimia etc. may also cause osteoporosis because there can be less amount of calcium intake.

Amenorrhoea:- It is a menstrual disorder or illness in the female of 18 years and above either never began menstruating or menstruation is absent for three months and more.

Types of amenorrhoea: there are two types of amenorrhoea i.e., primary amenorrhoea and secondary amenorrhoea.

Primary amenorrhoea: It is characterised by delayed menarche which is the onset of the first period during puberty.

Secondary amenorrhoea: A woman who has her natural menstrual cycle at a specific time and then stops menstruating for three months or more said to have secondary amenorrhoea.

There are various factors or causes which may inspire or enhance the chances of amenorrhoea. These factors are:

Hormone changes: Some hormonal changes such as a change in the output of gonadotropic hormones. The gonadotropic hormone stimulates the growth of gonads and secretion of sex hormones. If ovaries do not release oestrogen, the menstrual cycle gets disrupted or stops in women causing amenorrhoea.

Intensive exercises: There are maximum chances of amenorrhoea in female athletes, especially in long-distance runners, swimmers and gymnasts. These athletes do intensive exercise or training which usually leads to a decrease in oestrogen which is mainly responsible to regulate the menstrual cycle in females.

Intake of fewer carbohydrates or calories: If a woman athlete takes less number of calories in comparison to her requirement, she may suffer from amenorrhoea. Intake of insufficient calories can lead to a decrease in oestrogen hormone which helps to regulate the menstrual cycle.

Eating disorders: Most of the girls with female athlete triad try to lose their body weight as a way to improve their performance in the field of games and sports. To lose weight, they may practice unhealthy weight-control methods, including restricted food intake, self-induced vomiting, consumption of appetite suppressants and diet pills and use of laxatives. These are the following types of eating disorders.

- Anorexia Nervosa: In this eating disorder, the female athletes think only about food, dieting and bodyweight all the time.

- Bulimia Nervosa: In this eating disorder, a female athlete eats an excessive amount of food and then vomits it in order not to gain weight.