

CHAPTER

02

Children and Women in Sports

There is an importance of physical activities for children for their growth and development. The postural deformities that restricts their growth and development can also be corrected through physical activities. Women are also equally important in society and they are taking active part in physical activities or competitions.

CHAPTER CHECKLIST

- Common Postural Deformities
 - Special Consideration
 - Female Athlete Triad
-

Common Postural Deformities

This refers to the deformation in the skeletal structure or where the body parts are not aligned to each other, that results in some kind of postural deformities. People having postural deformities cannot perform their work efficiently.

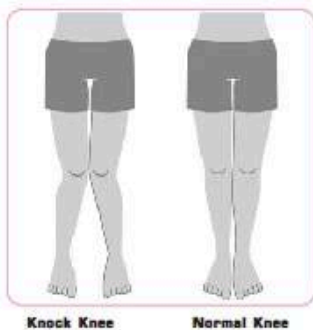
Some common postural deformities are knock knee, flat foot, round shoulders, lordosis, kyphosis, bow legs and scoliosis.

They are discussed below

Knock Knee

Knock knee is a major postural deformity in which both the knees knock or touch or overlap each other in the normal standing position.

Due to this deformity, the gap between ankles goes on increasing and an individual usually faces difficulty during walking and running. People with knock knees cannot be good players or athletes.



Knock Knee

Normal Knee

Causes

- Weakness of muscles and ligaments.
- Overweight body and lack of balanced diet.
- Lack of vitamin D, calcium and phosphorus.
- Chronic illness, injury and flat foot.
- Due to rickets *i.e.* problems with bone development.
- Genetic conditions affecting the development of the bones or joints.

Precautions

- Balanced diet should be taken.
- Do not force the babies to walk at early age.

Corrective Measures or Exercises

If knock knees are treated at an early age, then there are greater chances of correcting them as the bones are soft at early age.

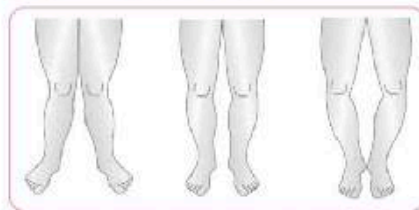
The following exercises should be performed

- Horse riding should be done regularly, as it is one of the best exercises for correcting this problem.
- Keep a pillow between your knees and stand straight for some time. Both the feet should touch each other.
- Perform *Padmasana* and *Gomukhasana*.
- Use walking callipers.

Bow Legs

It is just the reverse or opposite of the knock knees position. Infact, if there is a wide gap between the knees, when standing with feet together, the individual has bow legs or *Genu Varum*.

In this deformity, knees are widely apart. There remains a wide gap between knees when a bow legged person stands with his feet together. This deformity can be observed easily when an individual walks or runs.



Genu Varum
(Knock Knees)

Normal

Genu Varum
(Bow Legged)

Causes

- Putting extra weight on leg muscles.
- Lack of balanced diet and deficiency of calcium and phosphorus.
- Improper way of walking.
- Forcing babies to walk at a very early age.
- Overweight.
- Deficiency of Vitamin 'D'.
- Bone fractures that haven't healed properly.
- Abnormal bone development or bone dysplasia.

Precautions

- Balanced diet should be taken.
- Do not force the babies to walk at early age.

Corrective Measures or Exercises

The exercises for correcting bow legs are similar to that of knock knees. This deformity can also be corrected at an early age.

As a child grows up, the bones and muscles become firm and rigid and then corrective measures are not very effective.

The exercises are as follows

- Walk by bending the toes inward or on the inner edge of the feet.
- Squat by tying a piece of cloth on both legs at knees level. Repeat this for a few times.
- Perform *Ardhmatseyendrasana*, *Garudasana* and *Ardha Chakrasana*.

Flat Foot

Babies have flat foot but the feet begin to arch as the infants start walking. However, if there is flat foot even in later childhood, it is postural deformity called flat foot.

It is a deformity of the feet. In this deformity, there is no arch in the foot and the foot is completely flat. The individual faces problem in standing, walking, jumping and running.

It is easy to observe whether a person has flat foot deformity or not. Dip your feet in water and walk on the floor. If there is not a proper arch of footprints on the floor, then you have the deformity of flat foot.

Causes

- Heaviness of the body.
- Standing for a long time.
- Use of poor quality footwear that is not having an arch.
- Faulty posture.
- Weak muscles that cannot bear the body weight properly.
- Carrying heavy weight for a longer period.
- Leg length inequality can also cause flat-footedness by forcing the longer limb to compensate by flattening the arch.



Flat Arch

Normal Arch

Precautions

- Wear shoes of proper shape and size.
- High heeled shoes or walking barefoot for long durations should be avoided.
- Do not force babies to walk at an early stage.
- Obesity and carrying heavy weight in early childhood should be avoided.

Corrective Measures or Exercises

Flat foot means missing of the arch. This can also be corrected in the childhood.

The following exercises should be performed

- Walk on wooden staircase.
- Perform rope skipping.
- Therapeutic massage, such as rolling a ball under your foot, may help to improve arch flexibility.
- Perform downward dog yoga pose that also aims to lengthen and strengthen the calf muscles and achilles tendon.

Round Shoulders

It is a postural deformity in which the shoulders become round as they are drawn forward, the head is extended and the chin points forward.



Rounded Shoulders

Normal Shoulders

Causes

- Poor posture at work, particularly in a desk job.
- Sitting on faulty or improper furniture.
- Wrong habit of standing, walking and sitting.
- Carrying heavy load on shoulders.
- Wearing very tight clothes.
- Lack of proper exercise, especially of shoulders may also lead to round shoulders.

Precautions

- Do not sit, stand or walk in bent position.
- Avoid tight fitting clothes.
- Avoid sitting on improper furniture.

Corrective Measures or Exercises

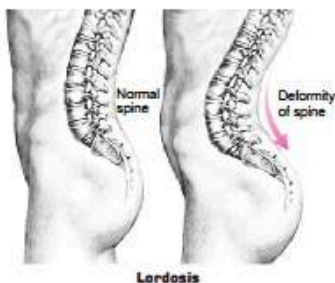
The common postural deformity of round shoulders can be corrected by doing some exercises.

They are as follows

- Stand in a correct posture.

Lordosis

It is the inward curvature of the spine or a deformity of spinal curvature. It is an increased forward curve in the lumbar region. It creates problems in standing and walking.



Causes

- Habitual overeating.
- Improper environment.
- Diseases affecting vertebrae.
- Improper development of muscles.
- Not doing regular exercises.
- Obesity or overweight.

Precautions

- Eat healthy and less oily foods.
- Maintain normal body weight.
- Do not bend too much while sitting.
- Doing regular lower back stretching exercises.

Corrective Measures or Exercises

Just like any other deformity, lordosis can also be corrected effectively if measures are taken at an early age. There are various exercises and asanas to treat lordosis.

The exercises are as follows

- Lying in prone position, raise lower back region by keeping hands under abdomen, hips and shoulders down.
- Lying in prone position, push torso (upper portion of body) up by keeping pelvic region on the floor and palms flat on the floor.
- Sitting on a chair, bend and reach to the floor with shoulders positioning between the knees.

Kyphosis

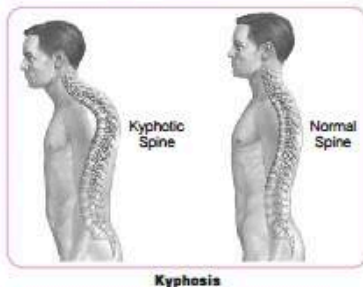
It is a deformity of the spinal curvature in which there is an increase or exaggeration of a backward curve or a decrease of a forward curve. It is also called as "round upper back" or in the case of severe curve as "hunchback".

Causes

- Malnutrition and illness.
- Carrying heavy load on shoulders.
- Habit of bending while walking.
- Muscle weakness in the upper back.
- Osteoporosis, or the loss of bone strength.
- Injury to the spine.

Precautions

- Take a balanced diet.
- Keep the body straight while carrying weight.
- Avoid walking too long with weight on one hand.
- Learn appropriate posture of sitting, standing and walking.
- Proper and adequate exercise.



Corrective Measures or Exercises

In kyphosis, the spine seems protruding backwards as the spinal cord bends in bow shape.

The corrective exercises for kyphosis are as follows

- Lying in supine (chest facing ceiling) position, draw knees upwards while feet are flat on the ground and raise arms upwards over the head. Hold this position for some time.
- Lying in prone position, raise your head and trunk region and hold the position for sometime.

- Bend head backwards in standing position.
- Hold arms at shoulder level and bend elbows.
- Perform *Chakrasana*, *Dhanurasana* and *Bhujangasana*.

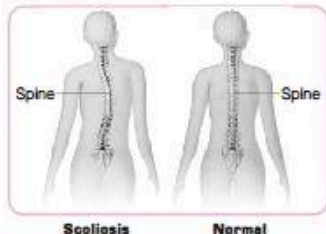
Scoliosis

Scoliosis is an abnormal curvature of the spine. The normal shape of a person's spine includes a curve at the top of the shoulder and a curve at a lower back. Scoliosis is a sideways curvature of the spine that occurs most often during the growth spurt before puberty.

A simple or single curve to the left or convexity left is commonly called a 'C' curve, scoliotic curves may be found in 'S' shape.

Causes

- Birth defects or heredity defects.
- Short leg on one side.
- One side flat foot.
- Carrying heavy loads on one shoulder.
- One side paralysis of spinal muscles.
- Wrong standing posture.
- Neurological abnormalities.



Precautions

- Take a balanced diet.
- Keep the body straight while carrying weights.
- Avoid walking too long with carrying weight in one hand.
- Don't walk, sit or stand in bent position.

Corrective Measures or Exercises

The exercises for correcting the scoliosis are designed to correct the rotatory curvature of the spine.

The exercises are described as follows

- Perform *Trikonasana* with proper technique.
- Lie down in prone position i.e. on the chest. Right arm should be upward and left arm at side. After that, move right arm towards the left overhead. Press down with left hand and then slide the left hip up.
- Standing straight, lift left heel and left hip, extend right arm in an arch to the left and press left hand against the ribs.
- Standing in straight position, touch the finger tips of the left hand to the left shoulder and bend the upper body to the right.

Corrective Measures for Postural Deformities

Some of the additional corrective measures for postural deformities are discussed below

1. **Knowledge of Proper Posture** First and foremost is to educate about the proper posture while sitting, standing, walking, etc. If people know about proper posture, then they will also make an effort to maintain it.
2. **Taking a Balanced Diet** Eating nutritious food that has all the essential micro and macro nutrients prevents the occurrence of postural deformities.
3. **Avoid Sitting at One Place** Sitting continuously, watching TV, playing computer games are the signs of sedentary lifestyle. This not only increases obesity but also causes various postural deformities.
4. **Doing Specific Exercises** There are many different types of exercises that strengthen and tone the back muscles, spine and bones. Doing those specific exercises will greatly help in correcting the postural deformity.

Special Consideration

There are some specific considerations that should be taken care by sportswomen. Some special considerations are menarche and menstrual dysfunction. These are the natural considerations that are present in every women.

Girls and women who are active in sports, need to consider these seriously. These considerations are associated with their physiology and also affect their metabolism. They should be advised to maintain a healthy diet and regular exercise routine.

Menarche

Menarche is the girl's first menstrual period or bleeding. It can happen as early as age 9 or upto age 16. The exact period of menarche depends upon the biological, genetical and environmental factors.

During this time, girls feel tense and emotional as it is a transition period from girl to womanhood. In the puberty stage, girls go through many changes like gain in height and mass, secretion of estrogen by ovaries, breast enlargements and other physical changes. So, special attention should be given to them at this time.

As a sportsperson, a young woman has to take special care of herself at that time. It is essential to take proper nutrition during this period, so that the body performs all its functions normally.

Problems like delayed menarche is experienced by some women who are engaged in intensive sports activities. So, women with delayed menarche may succeed in sports such as gymnastics, whereas those women who have early menarche may succeed in sports such as swimming and rowing because they get more adipose tissue or adequate weight.

Menstrual Dysfunction

It means abnormal bleeding and irregular menstrual cycle. Normally, a menstrual cycle lasts upto 3 to 7 days and occurs every 22 to 35 days. During menstrual dysfunction, women often complain of headache, back pain, fatigue, cramps, tiredness, etc.

Due to participation of women in physical fitness and competitive endurance sports, the incidence of menstrual dysfunction has increased.

Long distance running and other sports may lead to alterations in androgen, oestrogen and progesterone hormones, which in some women may directly or indirectly result in menstrual dysfunction.

This not only hampers their physical performance but also challenges them psychologically. During these days, women should be more careful about their cleanliness and hygienic habits.

Menstrual dysfunction is characterised by disruptions.

It has several types that are explained below

1. Abnormal Uterine Bleeding Excessive or prolonged menstrual bleeding.

5. Pre Menstrual Syndrome (PMS) Physical and emotional discomfort prior to menstruation.
6. Pre Menstrual Dysphonic Disorder (PMDD) Severe physical and emotional discomfort prior to menstruation.

Female Athlete Triad

The 'Female Athlete Triad' is a syndrome of three related conditions *i.e.* Osteoporosis, Amenorrhea, Eating Disorders, generally seen in teenage or adult female athletes who aren't meeting their energy requirements properly, which ultimately leaves them undernourished. This also affects their performance severely.

If an athlete is suffering from one element of triad, it is likely that she is suffering from the other two components of triad as well.

Female athletes focus on leanness or low body weight. Therefore, they eat less and take a fat free diet. But their body then lacks essential vitamins and minerals. The effect of less energy intake is serious illness of many types.

The symptoms include dry skin, significant weight loss, cold hands and feet, low heart rate, blood pressure, hypertension, increased incidence of bone fracture, irregular menstrual cycle, anaemia, depression, etc. The components of female athlete triad are discussed below

Osteoporosis (Decreased Bone Density)

Osteoporosis is a weakening of the bones due to the loss of bone density and improper bone formation. This condition can ruin a female athlete's career because it may lead to bone fractures and other injuries.

Women suffering from this disease lack minerals in their bone contents. Oestrogen is also low.

The bones become porous, brittle and break easily. This condition reduces the sports performances and makes a person prone to fractures and injuries.



Female athletes are at a greater risk of osteoporosis because of restricted dietary energy intake, vigorous physical exercises for prolonged periods, not followed by calcium rich diet, family dysfunction, social problems and environmental factors.

Causes

- Low oestrogen levels and poor nutrition, especially low calcium intake, can lead to osteoporosis.
- Imbalance of thyroxine hormone (Hyperthyroidism) can also cause bone loss.

Preventive Measures

- Women should eat food rich in calcium and protein. They should take vitamin D through sunlight or a supplement.
- They should avoid bad habits such as smoking, alcohol consumption etc.
- Timely check-up of osteoporosis.
- They should perform proper physical activity.

Amenorrhoea (Menstrual Irregularities)

Exercising intensively and not taking enough calories can lead to hormonal imbalances that results in a girl's menstrual cycle becoming irregular or stopping altogether. This condition is known as amenorrhoea. Thus, amenorrhoea refers to the absence of menstrual periods or becoming irregular.

Hair loss, headache, change in vision and development of facial hair are symptoms of amenorrhoea.

Amenorrhoea can be of two types *i.e.* *primary*, which means delayed menarche and *secondary*, that refers to menstruating initially and then stopping.

In the absence of menstrual cycle, the secondary characteristics of puberty may not develop till the age of 16. This condition can cause extreme physical and psychological stress.

Causes

- Hard and vigorous exercise is the primary factor responsible for the amenorrhoea.
- Not taking balanced diet and excessive low weight are also responsible for causing amenorrhoea.
- Genetic factors are also one of the causes of it.

Preventive Measures

- Take balanced diet and make proper exercise plan.
- Bring changes in lifestyle.
- Hormone therapy may be used to balance out your hormones.

Eating Disorders (Energy Deficit)

It refers to taking very little calories due to which there is deficiency in the body. The deficiency can be of essential nutrients or even lack of energy. Eating disorder is related to mental illness and affects a person's physical and mental health.

To improve athletic performance, most of the female athletes try to lose weight. For this purpose, they do not eat enough food containing fat and particularly iron, which leads to serious disorders like anorexia nervosa, bulimia nervosa, anaemia, etc. These are as follows

1. **Anorexia Nervosa** It is a condition where a person refuses to eat well and maintain normal body weight according to the height. In this disorder, the female athletes continuously think about dieting, food and body weight. This condition leads to a number of health problems like reduced bone density, damaged kidneys, heart disorders, etc.
2. **Bulimia Nervosa** It is a condition in which an individual binges on food, followed by methods to avoid weight gain. It is a potentially life-threatening eating disorder. To get rid of calories and prevent weight gain, people with Bulimia may use different methods like self induced vomiting, excessive exercises etc.
3. **Anaemia** It is a condition which causes low red blood cells in the body. This is due to lack of iron in the diet. Women athletes do vigorous exercises and if it is not followed by a healthy diet, then it leads to anaemia. Other causes are excessive blood loss from menstruation or any disease. Symptoms of iron-deficiency anaemia include fatigue, muscle burning, shortness of breath during exercise, nausea, frequent infections, etc.

CHAPTER PRACTICE

OBJECTIVE TYPE QUESTIONS

Multiple Choice Questions (MCQs)

- 1** In bow-legs, there is/are CBSE 2020
(a) wide gap between the knees
(b) plain foot sole
(c) knees colliding with each other
(d) both legs curving inwards
Ans. (a) wide gap between the knees
- 2** Abnormal curve of the spine at the front is called CBSE 2020
(a) Scoliosis (b) Kyphosis
(c) Lordosis (d) Psoriasis
Ans. (c) Lordosis
- 3** In which kind of deformity, the gap between ankles goes on increasing and an individual faces difficulty during walking and running?
(a) Bow legs (b) Knock knee
(c) Flat foot (d) Scoliosis
Ans. (b) Knock knee
- 4** In which type of Menstrual Dysfunction, light or infrequent menstruation is witnessed by the woman?
(a) Pre Menstrual Syndrome (b) Amenorrhoea
(c) Oligomenorrhoea
(d) Premenstrual Dysphoric Disorder
Ans. (c) Oligomenorrhoea
- 5** In which condition, the bones become porous, brittle and breaks easily?
(a) Amenorrhoea (b) Osteoporosis
(c) Oligomenorrhoea (d) None of these
Ans. (b) Osteoporosis
- 6** is a disorder where a person refuses to eat well and maintain normal body weight according to weight and height.
(a) Anorexia Nervosa (b) Bulimia Nervosa
(c) Amenorrhoea (d) None of these
Ans. (a) Anorexia Nervosa
- 7** Genu Valgum is also known as CBSE 2021 Term I
(a) Flat foot
- 8** Pes planus is also known as CBSE 2021 Term I
(a) Scoliosis
(b) Knock-knees
(c) Lordosis
(d) Flat foot
Ans. (b) Knock-knee
- 9** Halasana is used for curing which of the following deformities? CBSE SQP 2021 Term I
(a) Kyphosis (b) Scoliosis
(c) Lordosis (d) Flatfoot
Ans. (c) Lordosis
- 10** Assertion (A) Lordosis is treatable by doing the Bhujangasana and Tadasana.
Reason (R) These asanas strengthen the muscles and help in maintaining the balance of the body.
In the context of above two statements, which one of the following is correct?
Codes
(a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true, but R is not the correct explanation of A
(c) A is true, but R is false
(d) A is false, but R is true
Ans. (d) A is false, but R is true

Fill in the Blanks

- 11** is also known as round upper back.
Ans. Kyphosis
- 12** refers to the absence of menstrual periods or becoming irregular.
Ans. Amenorrhoea

State True or False

- 13** Anaemia is a condition which causes low red blood cells in the body.
Ans. True
- 14** Use of poor quality footwear leads to flat foot.
Ans. True

- 16** Hair Loss, headache, change in vision are symptoms of amenorrhoea.

Ans True

Match the Following

17	List I (Postural Deformities)	List II (Causes)
A.	Knock Knee	(i) Weakness of muscles and ligaments.
B.	Round Shoulders	(ii) Use of poor quality footwear.
C.	Flat Foot	(iii) Carrying heavy load on shoulders.
D.	Bow Legs	(iv) Putting extra weight on leg muscles.

Codes

	A	B	C	D		A	B	C	D
(a)	(i)	(iii)	(ii)	(iv)	(b)	(ii)	(i)	(iii)	(iv)
(c)	(iv)	(iii)	(ii)	(i)	(d)	(iii)	(iv)	(i)	(ii)

Ans (a) (i) (iii) (ii) (iv)

© VERY SHORT ANSWER TYPE QUESTIONS

- 18** Which type of deformity is 'Kyphosis'?

CBSE 2019

Ans It is a deformity of the spinal curvature in which there is an increase or exaggeration of a backward curve or a decrease of a forward curve.

- 19** Name the deformity for which horse riding can be used as corrective measure.

Ans The deformity for which horse riding can be used as a corrective measure is knock knee.

- 20** State the common postural deformities.

All India 2017

Ans Common postural deformities are kyphosis, flat foot, knock knee, lordosis, bow legs and round shoulders.

- 21** Write the causes of scoliosis. Delhi 2012

Ans The causes of scoliosis are
 • Heredity defects.
 • Carrying heavy loads on one shoulder.

- 22** Define flat foot. All India 2014

Ans Flat foot is a deformity of the feet. In this

- 23** What are the causes of round shoulders?

Delhi 2012

Ans The causes of round shoulders are
 • Poor posture in work, particularly in desk job.
 • Sitting on faulty or improper furniture.
 • Wrong habit of sitting and standing.
 • Carrying heavy load on shoulders.

- 24** What do you mean by menarche?

Ans A girl's first menstrual period is known as menarche. Girls may face stress and emotional tension during menarche. Menarche usually occurs between 9 and 15 years of age.

- 25** Mention two causes of low fitness level in women athletes.

Ans (i) Women athletes take improper diet.
 (ii) This is followed by vigorous exercises.

- 26** What are the symptoms of menstrual dysfunction?

Ans The symptoms are irregular menstrual cycle, headache, backpain, fatigue and cramps.

- 27** What are the components of female athlete triad?

Ans The components of female athlete triad are eating disorders, osteoporosis and amenorrhoea.

- 28** What is osteoporosis? All India 2016

Ans Osteoporosis is a weakening of the bones due to the loss of bone density and improper bone formation. This condition can ruin a female athlete's career because it may lead to bone fractures and other injuries.

- 29** Among females, what type of menstrual dysfunction is called amenorrhoea? CBSE 2019

Ans Amenorrhoea is a condition in which there is hormonal imbalances due to intensive exercises and deficiency of nutrients in the body.

- 30** Which problems may arise due to eating disorders?

Ans Eating disorders may give rise to Anorexia Nervosa, Bulimia Nervosa and Anaemia.

- 31** What do you mean by Bulimia? CBSE 2019

Ans Bulimia is a type of eating disorder in which

SHORT ANSWER TYPE QUESTIONS

32 How can physical activities be corrective measures for common postural deformities? All India 2011

Ans Physical activities can greatly help in correcting common postural deformities. Physical activities done in the form of exercises, games or sports increase energy and the efficiency to do work. More energy means perfection in the tasks performed. This ensures proper alignment of the body.

This also increases flexibility of the body as bones and muscles remain well-toned. The muscles remain in proper position. The spine and bones remain healthy. This greatly reduces the chances of any type of common postural deformity.

33 Write about the deformities of spinal curvature. All India 2016

- Ans** There are three types of spinal curvature
- Lordosis** It is the inward curvature of the spine or a deformity of spinal curvature. It is an increased forward curve in the lumbar region. It creates problems in standing and walking.
 - Kyphosis** It is a deformity of the spinal curvature in which there is an increase or exaggeration of a backward curve or a decrease of a forward curve. It is also called as round upper back.
 - Scoliosis** It is an abnormal curvature of the spine. It is a sideways curvature of the spine that occurs most often during the growth spurt before puberty.

34 Suggest exercises as corrective measures for round shoulders. Delhi 2014

Or What do you mean by round shoulders? Suggest any four physical activities for correcting round shoulders. All India 2015, 14

Ans Round shoulder is a postural deformity in which the shoulders become round as they are drawn forward, the head is extended and the chin points forward.

The four corrective measures are

- Stand in correct posture.

- Perform *Chakrasana* and *Dhanurasana* for some time.

- Hold the horizontal bar for some time.

35 What do you understand by female athlete triad and what are its components?

Ans The 'female athlete triad' is a syndrome of three related conditions generally seen in teenage or adult female athletes who aren't meeting their energy requirements, which ultimately leaves them undernourished. The three components of the female athlete triad include

- Eating disorders (Energy deficits)
- Osteoporosis (Decreased bone density)
- Amenorrhoea (Menstrual irregularities).

36 What are the causes of osteoporosis?

CBSE 2019

Or Write in brief about osteoporosis. What are the causes of osteoporosis in women?

All India 2017

Ans Osteoporosis is weakening of the bones due to the loss of bone density and improper bone formation. This condition can ruin a female athlete's career because it may lead to bone fractures and other injuries.

Causes of osteoporosis in women are as follows

- Lack of calcium and vitamin D in diet.
- Hormonal changes occurring during menopause reduce bone density.

37 Briefly explain amenorrhoea. How it is associated with women athletes?

Ans Amenorrhoea is a condition in which there is absence of menstrual periods or they become irregular.

It is of two types : primary which means delayed menarche and secondary that refers to menstruating initially and then stopping.

It is associated with women athletes because they do intensive exercises which is not followed by taking enough calories. This leads to hormonal imbalances which may cause amenorrhoea.

38 Explain anaemia. How will you identify that a woman is anaemic or not?

Ans Anaemia is a condition which causes low red blood cells in the body.

It is caused due to lack of iron in the diet,

An anaemic person can be identified by the specific symptoms such as muscle burning, shortness of breath, nausea, pale look, frequent infections and respiratory illnesses.

39 What is eating disorder? Explain the causes and effects of eating disorders among female athletes.

Ans Eating disorder means energy deficit. It is a specific component of the female athlete triad which is a syndrome of three related conditions generally seen in female athletes.

The first condition is eating disorder while the other two conditions of the triad are osteoporosis and amenorrhea.

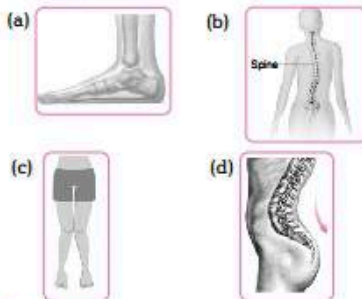
The causes of eating disorders among female athletes are as follows

- Female athletes focus on attaining low body weight so they take insufficient calories.
- They take fat free food which depletes the energy source in their body.

The effects are as follows

- Female athletes suffer from disorders like anorexia nervosa and anaemia.
- They also face other health problems like reduced bone density, damaged kidneys, heart disorders etc.

40 Identify the below given deformities and write their names.



Ans. (a) Flat foot
 (b) Scoliosis
 (c) Knock Knees
 (d) Lordosis

41 Karan is a five-year-old child. His mother

Ans. Karan is suffering from the deformity called knock knees. Knock knee is a major postural deformity in which both the knees knock or touch or overlap each other in the normal standing position.

Due to this deformity, the gap between ankles goes on increasing and an individual usually faces difficulty during walking and running. People with knock knees cannot be good players or athletes.

Causes

- Weakness of muscles and ligaments.
- Lack of balanced diet.
- Lack of vitamin D, calcium and phosphorus.
- Genetic conditions affecting the development of the bones or joints.
- Overweight

Precautions

- Balanced diet should be taken.
- Do not force the babies to walk at early age.

Corrective Measures

- If knock knees are treated at an early stage, then there are greater chances of correcting them since, the bones are soft. Therefore Karan's deformity can be treated by doing the following.
- Horse riding is to be done regularly.
- Keep a pillow between your knees whenever possible and stand straight.
- Perform padmasana and gomukhasana.
- Take nutritious meals.
- Use walking callipers.

42 Mahesh, Physical Education teacher at XYZ School observed that Raju a student of class VI has outward curve of vertebral column at thoracic region. He suggested some exercises to rectify this problem.

(i) What is this deformity known as?

- (a) Scoliosis (b) Kyphosis
 (c) Lordosis (d) Flat foot

(ii) Kyphosis is commonly known as

- (a) Hollow back
 (b) Hunch back
 (c) Sideways bending
 (d) Lordosis

(iii) Kyphosis is a deformity related to

- (a) Foot (b) Vertebral column

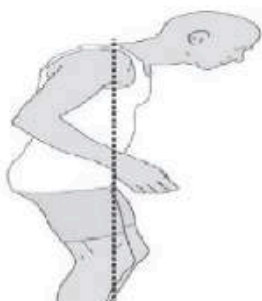
- 43** Posture plays a very significant role in our daily activities. Correct posture means the balancing of body in accurate and proper manner. Various types of postural deformities can be identified in individuals.



- (i) From the above given picture, the deformities seen on the left most is caused due to deficiency of
- (a) iron (b) calcium
(c) vit-D (d) Both (b) and (c)
- (ii) Walking on the inner edge of the feet can be a remedy for
- (a) bow legs (b) flat foot
(c) overweight (d) leg deformity
- (iii) The person in the middle is suffering with
- (a) rickets (b) flatfoot
(c) knock knees (d) elephant foot

- Ans** (i) (d) Both (b) and (c)
(ii) (a) bow legs
(iii) (c) knock knees

- 44** Sheetal spent her weekend checking the health status of all the security guards of her huge gated community as a part of project work assigned by PE teachers. She found out that more than half of them have shown a significant deformity in the upper part of their vertebral column.



- (i) The term used to define this deformity is
- (a) Lordosis (b) Scoliosis
(c) Kyphosis (d) Both (a) and (b)
- (ii) This deformity is mainly caused due to
- (a) carrying heavy loads (b) lack of exercise
(c) weak muscles (d) All of these
- (iii) The asana/s which helps in rectifying such condition/s/is/are
- (a) Chakrasana (b) Dhanurasana
(c) Halasana (d) Both(a) and (b)
- Ans** (i) (c) Kyphosis
(ii) (d) All of these
(iii) (d) Both (a) and (b)

LONG ANSWER TYPE QUESTIONS

- 45** Explain any five common postural deformities.

Ans Five common postural deformities are

- (i) **Knock Knee** It is a postural deformity in which both the knees touch or overlap each other in normal standing position.
- (ii) **Flat Foot** It is a deformity of the feet. In this deformity, there is no arch in the foot and the foot is completely flat.
- (iii) **Round Shoulder** It is a postural deformity in which the shoulders become round as they are drawn forward, the head is extended with the chin pointing forward.
- (iv) **Kyphosis** It is a deformity of the spinal curvature in which there is an increase or exaggeration of a backward curve or a decreased of a forward curve.
- (v) **Bow Legs** It is a deformity opposite to knock knee. In fact, if there is a wide gap between the knees, the deformity can be observed easily when an individual walks or runs.

- 46** Mention the causes, precautions and corrective measures of knock knees.

Delhi 2012

Ans Causes

- Weakness of muscles and ligaments.
- Lack of balanced diet.
- Lack of vitamin D, calcium and phosphorus.
- Overweight

Corrective Measures

- Horse riding is to be done regularly.
- Keep a pillow between your knees whenever possible.
- Perform *Padmasana* and *Gomukhasana*.
- Take nutritious meals.

- 47** Explain 'flat foot' and 'knock knees' and also suggest corrective measures for both postural deformities. CBSE 2019

Ans Flat Foot

Babies have flat foot but the feet begin to arch as the infants start walking. However, if there is flat foot even in later childhood, it is postural deformity called flat foot.

It is a deformity of the feet. In this deformity, there is no arch in the foot and the foot is completely flat. The individual faces problem in standing, walking, jumping and running.

The following exercises should be performed

- Walk on heels and toes.
- Pick up marbles with toes.
- Perform *Vajrasana*.
- Walk on wooden staircase.
- Perform rope skipping.
- Therapeutic massage, such as rolling a ball under your foot, may help to improve arch flexibility.
- Perform downward dog yoga pose that also aims to lengthen and strengthen the calf muscles and achilles tendon.

Knock Knee

Knock knee is a major postural deformity in which both the knees knock or touch or overlap each other in the normal standing position.

Due to this deformity, the gap between ankles goes on increasing and an individual usually faces difficulty during walking and running. People with knock knees cannot be good players or athletes.

For corrective measures, refer to answer no. 70.

- 48** Suggest physical exercises as corrective measures for 'Kyphosis and Lordosis'. All India 2012

Ans Kyphosis

Corrective Measures

- Lying in supine (chest facing ceiling) position, draw knees upwards while feet are flat on the ground and raise arms upwards over the head. Hold this position for some time.
- Lying in prone position, raise your head and trunk region and hold the position for sometime.
- Sitting on a chair, hold hands from behind the back of the chair so that shoulders are pulled backwards and back is straight. Hold and release this position for 4-5 times.
- Bend head backwards in standing position.
- Hold arms at shoulder level and bend elbows.
- Perform *Chakrasana*, *Dhanurasana* and *Bhujangasana*.

Lordosis

It is the inward curvature of the spine or a deformity of spinal curvature.

Corrective Measures

- Lying in prone position, raise lower back region by keeping hands under abdomen, hips and shoulders down.
- Lying in prone position, push torso (upper portion of body) up by keeping pelvic region on the floor and palms flat on the floor.
- Sitting on a chair, bend and reach to the floor with shoulders positioning between the knees.
- Lie on your back and lift feet vertically.
- Perform *Halasana* and *Paschimottasana*.
- Do sit-ups slowly.

- 49** Explain the causes, precautions and remedies of bow legs. All India 2013

Ans Causes

- Putting extra weight on leg muscles.
- Lack of balanced diet and deficiency of calcium and phosphorus.
- Improper way of walking.

Precautions

- Balanced diet should be taken.
- Do not force the babies to walk at early age.

Remedies

- Use vitamin D supplement and a proper balanced diet.
- Never stand for a long time.

50 What do you understand by the female athlete triad? Explain the symptoms and causes of any one of them. CBSE 2020

Ans 'Female Athlete Triad' is a syndrome of three related conditions generally seen in teenage or adult female athletes who are not meeting their energy requirements properly.

This ultimately leaves them undernourished and prone to diseases. The three components of female athlete triad include

- (i) Disordered eating and anaemia (Energy deficits)
- (ii) Osteoporosis (Decreased bone density)

(iii) Amenorrhea (Menstrual irregularities)

Osteoporosis

It is a component of female athlete triad. In it, the body loses too much bones, make it too little bones or both. Symptoms and causes of osteoporosis are as follows

Symptoms

- Bones become weak and brittle.
- Bones break easily than expected.

Causes

- Decrease in bone density.
- Not taking proper nutrients like calcium and phosphorus.

SELF ASSESSMENT

OBJECTIVE ANSWER TYPE QUESTIONS

- 1 Which of the following is a case of Kyphosis?
(a) Disease affecting vertebrae (b) Habitual overeating
(c) Wearing light and shapeless clothes (d) None of these
- 2 Menstrual dysfunction occurs due to
- 3 The precaution of avoiding wearing of tight fitting clothes should be followed if you have the postural deformity of round shoulders. State true or false.
- 4 Disordered eating is one of the components of female athletes triad which is covered by the absence of menstrual periods. State true or false.

VERY SHORT ANSWER TYPE QUESTIONS

- 5 Define postural deformities.
- 6 Define bow legs.

SHORT ANSWER TYPE QUESTIONS

- 7 Explain the exercises that can correct lordosis.
- 8 What are the symptoms of female athlete triad?
- 9 Explain why female athletes are prone to fractures and injuries than males.

LONG ANSWER TYPE QUESTIONS

- 10 What are the five main reasons that cause deformities?
- 11 Explain what postural deformities are caused if the back or the spine is not straight. Suggest some remedial measures of those deformities.