Chapter IV

ANALYSIS OF THE DATA AND RESULTS OF THE STUDY

The research scholar had tested 1400 subjects to ascertain postural deformities. After testing the students, it was observed that the subjects fell under 3 categories i.e. Subjects suffering from single deformity, subjects suffering from multiple defects and subjects with normal posture. Details of the subjects with single deformities, multiple deformities and a normal posture are given in Table-1.

Table – 1

PERCENTAGE OF SUBJECTS WITH SINGLE DEFORMITY, MULTIPLE DEFORMITIES AND NORMAL POSTURE.

<table>
<thead>
<tr>
<th>Deformity</th>
<th>No. of Subjects</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Deformity</td>
<td>147</td>
<td>10.50 %</td>
</tr>
<tr>
<td>Multiple Deformities</td>
<td>124</td>
<td>8.86 %</td>
</tr>
<tr>
<td>Normal Posture</td>
<td>1129</td>
<td>80.64 %</td>
</tr>
</tbody>
</table>
From the above Table it is proved that out of 1400 subjects tested by the scholar, 10.50 percent suffered from single defects. 8.86 Percent suffered from multiple defects and 80.64 percent were normal subjects. This is shown by a circular graph.
In the present study, subjects suffering from single deformities only have been taken into consideration in order to study the effect of conditioning and corrective programmes.

The breakup of subjects suffering from single deformities i.e. flat-foot, Lordosis, Kyphosis and Scoliosis alongwith their percentage is given in Table – 2.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Nature of Defect</th>
<th>No. of Subjects</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Flat-foot</td>
<td>41</td>
<td>2.92 %</td>
</tr>
<tr>
<td>2.</td>
<td>Lordosis</td>
<td>49</td>
<td>3.50 %</td>
</tr>
<tr>
<td>3.</td>
<td>Kyphosis</td>
<td>36</td>
<td>2.57 %</td>
</tr>
<tr>
<td>4.</td>
<td>Scoliosis</td>
<td>21</td>
<td>1.50 %</td>
</tr>
</tbody>
</table>

From the above table, it is observed that out of the 1400 subjects 2.92 percent suffered from flat-foot; 3.50 percent suffered from Lordosis, 2.57 percent suffered from Kyphosis and 1.50 percent suffered from scoliosis. It is noted that maximum subjects suffered from Lordosis and minimum number of subjects suffered from Scoliosis in the age group of 7 to 10 years. See. Fig.
<p>| | | | | | | |</p>
<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total Students</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Flat-foot defects</td>
<td>2.92%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Lordosis defects</td>
<td>3.50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Kyphosis defects</td>
<td>2.57%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Scoliosis defects</td>
<td>1.50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Remaining normal Students</td>
<td>89.51%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Discussion of Findings

The research scholar was tempted to take up this study as she observed that the number of boys suffering from flat-foot, scoliosis, kyphosis and lordosis was quite visible amongst students in Government schools. It is an admitted fact that boys coming to Government schools, by and large, belong to either the Low income group of society or are from poor families. It is found that not even a few Parents of the upper middle class step into these schools of their on volition. It has been seen that such boys joined the Government schools when they had been thrown out from Private Schools for poor academic performances. Compared to the rich people the boys from the poor strata of society do not receive any parental attention or cooperation for their well being. If they suffer from any kind of deformity no remedial measures are taken by the parents so such the number of deformed students is on the higher side in Govt. Schools.

The survey conducted by the scholar did reveal that the number of deformed students was quite high compared to the general population in the schools. It would be seen from the survey report that in a population of 1400 boys in Govt. Schools, 271 students were found suffering from physical
deformities and their percentage was more than 19%. The apparent causes for these deformities could be attributed to their poor living conditions as well as the neglectful attitude of the parents who, being illiterate, pay no attention to such deformities and seek no remedial treatment in time.

The society in which they live is equally responsible for nurturing bad habits. The parents are basically responsible for the growth and development of their children. It is natural that a child learns from his parents and is influenced by the surroundings. Thus he would instinctively imitate and copy his elders and this would ultimately spoil his own personality because of his poor habits.

Secondly, it would be admitted that good food and nutritious diet is also very essential for the development of health and the posture. It is unfortunate that the living habits of the majority the people, being sub-standard are not conducive for better living. In India the food habits vary from place to place, community to community and region. One can understand the impact of religion on the manners, living and food habits, dress etc. of the people. Generally, the poor people and those belonging to the lower strata of society are not aware of a values of the balanced and
nutritious diet which is very essential for the development and adequate growth of the children.

In some Government schools the classrooms are not of adequate size and in addition suffer from over crowding. Moreover, proper attention is not paid to providing adequate furnished classrooms. So the construction and maintenance of the school buildings should be in accordance with the prescribed standards and Health Regulations. Adequate and well arranged lighting and seating arrangements with proper ventilation, reliable equipment for fire protection, adequate toilet and sanitation facilities and adequate facilities of drinking water are some commonly recognized requirements for a healthy school environment.

There is also a paucity of teaching aids and staff. The schools thus suffer from lack of supervision and proper guidance. Lack of inclination on the part of teachers to do their best and take personal interest in their students performances add to the improper development of the personality of the child. The scholar has also observed that in some schools students are denied sports activities as well as physical education classes. Some schools lack sports grounds and sports equipments. In some schools, it has been seen
that teachers do not take interest in sports activity and the boys are allowed to play the games in their own way. This also does not help and encourage the students in developing their sports aptitude. If the exercises and games are not done in the correct manner, they are bound to have an adverse influence on the child’s personality. Therefore, correct guidance in sports activities and physical education is essential for the all round development of a child.

It is unfortunate that even in the schools the impression is that physical education is not an important subject for study compared to the other subjects taught in schools. Infact, it is the other way as “sound mind in a sound body” is a must for the best education and development of the human personality. Therefore, it is essential that physical education should be given a position of respect in the school curriculum, because, ultimately, proper physical education will help to boost the personality of a child and remove inherent defects in him, if any, with the help of remedial corrective physical exercises. Thus the number of students suffering from flat-foot, scoliosis, kyphosis and lordosis can be reduced to a large extent, which will ultimately improve the health image of the nation. These deformities can be
corrected with the help of exercises to a large extent and the correct personality of a person can be developed.

The various studies undertaken by the scholar to detect the correct and healthy posture of the subjects under study, would reveal that 2.92 per cent subjects suffered from flat-foot. Although the figure is not very high, (whatever it is), it can be further improved by timely corrective exercises.

In the case of scoliosis 1.50 per cent subjects were found to be suffering from these deformities. The Scholar had found by discussing with the subjects that they did not get proper furniture to read and write at home and even at the school. They wrote by keeping books on the floor which is totally incorrect and develops the deformities like scoliosis.

From the survey it is noted that a large number of subjects suffered from kyphosis e.g. 2.57 per cent. The scholar carried the impression after seeing the subjects that this being a constitutional deformity, when any subject gains abnormal height and looks different from the class, he instinctively tries to under-play his abnormal self and thereby he unwillingly develops typical postural movements to conceal his height.
As regards lordosis 3.50 per cent subjects were found suffering from this deformity in Government schools. Sometimes it develops due to careless treatment of Kyphosis. As the Poor class students do not get balanced and proper diet, it causes the poor muscles and when hamstring becomes weak, The Lordosis develop.

Since these are constitutional deformities and involve proper development of bones and muscles to make a healthy and strong body; to cure these deformities requires persistent continous training. If proper attention is paid at the school level these deformities can be controlled to a large extent. The health education and physical education should contain a programme of development of posture-cum-personality of the students as these would play an important part in developing the personality of the students who are the future of any nation. A healthy nation must possess or have healthy and strong children.

**Remedial Programme**

The scholar had discussions with orthopedic Surgeon Dr. Amit Shah, experts in the field of corrective and exercise programme, and Physiotherapist of Sir Sayajirao Government Hospital Vadodara. They
advised to administer on subjects for a period of twelve weeks. Set of exercises were prepared according to the deformity. In each set, exercises were selected for a conditioning programme. Each exercise should be done with 10 repetitions and each exercise should be hold for five seconds. In second week 20 repetitions should be performed and slowly and steadily try to increase the breath held to 10 second. In the third week 30 repetitions should be performed for each exercise, and should be held for 10 seconds. One should keep rest for 10 seconds after each exercise and should perform the same for 10 times. In the fourth week 30 repetitions should be maintained for each exercise as advised in the 3rd week. Then from fifth week to twelfth week, the same repetitions should be followed with 10 seconds of rest after each repetition. With the help of an expert the correct way of standing, sitting and lying down should be strickly followed so that optimal effect of the exercises programme can be obtained.

**Lordosis**

Lordosis exercises & Asanas are meant to strengthen the abdominal and the gluteus muscles and lower back muscles. The exercises and Asanas should be performed in lying, sitting and standing positions.
ASANAS

1. UTTANPADASANA: -

Position

First of all lie on the back and keep the legs together with hands on the side, palms facing toward the floor.

Action

Raise both feet together approximately 30 degree high from the floor. Hold the legs up for sometime and slowly come to the starting position with exhale.

Benefit

It is best for strengthening the abdominal muscles.

2. HALASANA

Position

Lying on the back, keep the legs together with hand on the side and palms facing toward the floor.
Action

Inspire slowly and lift the legs together and try to touch the toes of the legs little away of the head, hold the position there and again come on the original position with expiration slowly.

Benefit

It is best for the back muscles and hamstrings.

3. PASCHIMOTTANASANA

Position

Sit on the floor with legs stretched and trunk along with back straight and perpendicular to thighs. Keep your hands aside with palm resting on floor.

Action

Slowly bend forward and try to catch toes of both legs with respective index fingers. Now try to touch your forehead to knees and elbows to the ground. Hold this position for few seconds and come in original position.

Benefit

There are three effect of stretching (i) hamstring (ii) Stretching spine and (iii) Shortening the abdominal.
4. **SHASHANKASANA**

**Position**

Bend both the legs on back side with legs apart with dorsi flex ankle touching the Glutei on the floor.

**Action**

Take your hands back and interlock them. Bend forward and try to touch the floor by your forehead by inhaling slowly, hold the position for few seconds and come in original position by exhaling slowly.

**Benefit**

It is beneficial to shorten the abdominal and stretching the hamstring and back muscles.

**EXERCISES**

For the Lumbar Spine

1. Tailor Sitting
2. Long sitting
3. Crook lying.
For abdominal:

1) Crook lying, one hand on the abdomen and other on the chest breathe in bulging out the abdomen and breathe out forcibly through the mouth tucking in the abdomen.

2) Crook lying arms at the sides try to touch the knee to the wall.

3) Stride sitting. Trunk movements.

4) Reach long sitting. Forward bending to touch the toes. It has three effect of stretching hamstrings, stretching spine and shortening the abdominals.

5) Crook lying, cycling in the air.

**Kyphosis**

Exercises and Asanas for Kyphosis can be performed to strengthen the dorsal muscles, to stretch the pectoralis muscles and to mobilize the back muscles and spine. Following are some Asanas and exercises advised to correct the deformities.
ASANAS

I. ARDHA MATSTENDRASANA

Position

Sitting position with both legs stretching forward. Arms on the backside of the body and straight from the elbow.

Action

Bend the right leg from the knee and put the heel below the left buttock.

Put the left leg toes across the right knee. Draw the right arms out side of the left leg and try to catch the toes with the fingers.

Take the left hand to the backside and try to touch the thigh of the right leg.

Turn your face toward the left side, hold this position for some time and repeat the same Asana from the opposite side.

Benefit

It stretches, the pectoral muscles, Mobilizes the spinal cord. It also strengthens the Transverse back muscles and it also helps to strengthen the lungs.
2. **YOGMUDRA**

**Position**

Sit in a Padmasana, catch the right leg with the opposite hand on the back side. Head, neck and back should be straight.

**Action**

Sit in erect position and inhale slowly. Now try to touch your chin to chest and slowly lower your body and touch your forehead, nose and chin to floor. Care should be taken that your back should remain erect during whole exercise to gain maximum benefit.

**Benefit**

It shortens the abdominal muscle, it stretch the pectoral muscle and back muscles.

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3. **MATSYASANA**

**Position**

First of all perform the Padmasana and slowly lie down on the floor on back. Keep the hand on the side and palm facing the floor.

**Action**

Inhale slowly, put the hands on the floor near the ear with fingers of both hands facing outside.
Hold the air in the lungs and try to touch your forehead to floor. Exhale and take your hands slowly up. Catch the toes and try to touch your elbow to the floor.

Again, inhale the air and put the palm near the ears, then hold the air and touch your head to the ground. Remain in this position for few seconds and slowly come to starting position.

Benefit

It helps to stretch the pectoral muscles; It also helps to strengthen the upper neck muscles. Back muscles can be strengthened and shortened. Spine also mobilizes.

Exercises

1) Lie on the floor on your stomach and slowly raise your head as much as possible.

2) Back raising in lying position.

3) Twisting the trunk keeping both hand raising at shoulder level and twist on both the side.
Scoliosis

Scoliosis means a bending of vertebral column to one side, combined with rotation of the vertebral bodies to the convexity side and spinous process to the concavity side.

To strengthen the back and neck muscles, the following Asanas and Exercises can be done in standing, lying and crawling position.

ASANAS

1. TRIKON ASANA:-

Position

Stand erect with leg apart (Approximately 2 to 2.5 feet)

Action

Slowly inhale and raise both hands at shoulder level. Palms facing towards the floor, hold the air inside for sometime.

Inhaling slowly bent toward the right side with bending right leg from knee and keeping the left leg should be straight.

Put your right hand palm on the floor and keep the left hand finger facing toward the sky.
With slowly inhaling come in original standing position.

Same way perform the same Asanas on the left side.

**Benefit**

It strengthen the spine and lungs and also dorsi flexor of the trunk.

**Exercises**

In scoliosis, most of the exercises should be double sided. Back muscles are not only the important muscles of the spine, but abdominal muscles are also equally important as side flexors of the Trunk. Free exercised are to be given to all the muscles of the spine. Arm, leg, and even breathing exercise should be included.

1) Stretch handing on boom or wall bars.

2) Lying on the back and grasping the wall bar, try to stretch your shoulder and relax it. Perform the same for 10 times.

3) Stood stride standing position, stretching and relaxing — patient stretches the spine by stretching away from the wall bars, the operator gives traction from the pelvic.

4) Head rolling.

5) Head rotation.

6) Head side flexion.
7) High ride sitting trunk circling.

8) High ride sitting trunk rotation.

9) High ride sitting trunk side bending.

**JANUSHIRASHANA**

**Position**

Take sitting position.

**Action**

Press the left foot heel strongly on the topmost part of right leg thigh. Stretch right leg straight. Catch the right leg's sole firmly with both the hands. Now exhale and bring stomach inside as much as you can. Now slowly bow down your head towards right leg such that your face touches the knee. Remain in this position for 10 seconds. Slowly increase the time as you master it. The same asana can be performed keeping left leg straight and bending right leg. With regular practice we can perform this asana for nearly half an hour. Perform this asana for 5 to 6 times a day.

**Caution**

This asana should be performed only after toilet is done properly.

**Benefit**

It will help to strengthen the arch of the leg.
It cures all problems related to urine.

This asana awakens the kundali shakti and removes tiredness.

**Flat-foot**

Flat foot exercises and Asanas are meant to strengthen the arches of the foot / feet. The exercises and Asanas should be perform in lying, sitting and standing position.

**ASANAS**

1. **JANUSHIRASHANA**

**Position**

Sitting position, legs ahead and straight.

**Action**

Keep right leg straight, put the left leg sole near the thigh, sole of the left leg facing toward the right leg, heel is touching pit of the thigh. Come in Namaskar action. Inhale the air and raise the both hands and try to stretch your hand as much possible as you can. Both sight of eyes should be on top of the nose. Hold this position as you can.
Exhale slowly and bent the torso forward till the forehead touch the right leg. Cross the both hands ahead of right leg and inter lock the both hand and try to pull the leg toward your side.

Benefit

It will help to strengthen the arch of the leg.

2. PASCHIMOTANASANA

Position

Sit on the floor with legs stretched and trunk along with back straight and perpendicular to thighs. Keep your hands aside with palm resting on floor.

Action

Slowly bend forward and try to catch toes of both legs with respective index fingers. Now try to touch your forehead to knees and elbows to the ground. Hold this position for few seconds and come in original position.

Benefit

It will help to strengthen the arch of the leg.
3. AKARNA DHANURASANA

Position

Sitting position with leg forward.

Action

Catch the toes of the right leg with the left hand and catch the left leg with right hand. Took the left leg toes near the right side ear. Try to put right and left legs toes as possible as you can pull it.

Benefit

It strengthen the arch of the legs.

Exercise

1. Raising the toes from standing position.

2. Lying on back, bend and abduct knees, bringing feet sole to sole, hands at the sides performing “Namaste with Feet”.

3. Lying on back, hips flexed, with legs against wall bringing toes down as far as possible, hands kept at sides.

4. Sitting position with feet six inches apart and parallel. Hands on knees. Pick up a marble with toes of left foot and place it behind right heel.

5. Standing position: Spread towel on the smooth floor. Keep heels on the ground and hands at sides. Use toes to pull towel under foot or
sole. Place a book or any weight at the end of the other end of the towel.

6. Sitting position with feet apart. Paper was spread on the floor and pressed with non-writing foot with hand on knees. Hold the pencil under the toe with its tip facing towards little finger and then to write in large strokes or bold letters.

Discussion of Hypothesis

The hypothesis stated earlier in the study, i.e. the common postural defect prevalent among boys would be Lordosis, Kyphosis, Scoliosis and Flat-foot has been accepted. The investigator had a belief that hardly any student might have any defect, but the scholar found in his research work that there are many students who suffer from different types of defect.

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