ABSTRACT

BACKGROUND

Human body has an upright posture which supports his body on his two legs, whereas most mammals that carry themselves on four. This condition has challenges significant changes in man's mechanism of sitting, standing, sleeping, lying, running, blood circulation, respiration, muscular growth and development of body coordination etc. It also has an impact on placing visceral organs, heart, lungs, liver, kidneys, and intestines. Accordingly to all human beings this various systems of body require stability and movements to perform their work with efficiency and least strain on the body organs. (M.L.Kamlesh)

The importance of physical education programmes is linked to a higher quality of life as well as academic achievements. It is well documented that regular physical activity in childhood and adolescence improve strength & endurance, health build, healthy bones & muscles, hips control weights, reduce anxiety and stress increases self esteem and may improve cardio respiratory function. Physical fitness is recognized as an important component of health and it may be important for the performance of functional activities and quality of life. The several researches indicated that postural deformities negative effects on physical fitness may result in high physical strain during the study period of the students. Keeping in view the fact that student’s physical fitness has important health consequences during their study, a large number of studies on effects of postural deformities on physical fitness have been reported from different countries step to the world. Data on the postural deformities and physical fitness of students from Denmark (Knutgen, 1961), England (Campbell & Pohndof, 1961), South Africa (Slon 1966), Belgium (Hebbelink & Borms, 1969), Israel (Ruskin 1978), Japan (Ishiko 1978) are available in the literature all these reports made the health planners realize the important contribution of health education & physical fitness in the development of total fitness.

Physical fitness has an important role in the education of new generation in the frame of physical and mental health and now days it is placed as a peace of education in the developed societies, education programmes. The study regarding the postural deformities and physical fitness programmes can be placed in a special order in the subject of school.
Therefore these study endowers to examine postural deformities prevalence in school children in Marathwada region of Maharashtra and its effects on their physical fitness.

300 school male children of 9 to 14 years of age group of various government and private schools in Marathwada region of Maharashtra had participated in this study. Exclusion criteria were the presence of any injury, chronic medical conditions such as asthma, heart disease or any other condition that would put the subjects at risk when performing the experimental tests. To participate in this study the permission was taken from the respective principals of various schools. The Name and class of the participants were recorded and age, height, weight, cervical spine, thoracic spine, lumbar spine, intermalleolar distance, inter condylar distance, foot arch, agility, explosive leg strength, speed were measured. All the children participated in this study had performed two different type of test, clinical examination of orthopaedics for screening of postural deformities and AAPHERD youth physical fitness test to observe the effect of deformities on fitness components.

The evaluation of posture was made by lateral, medial view of posture and by observing the cervical, thoracic, lumbar spine region for spinal deformities. Like kyphosis and scoliosis deformity was detected by the forward bending test in which a rib hump is observed on either side of the spine. Whereas as the bow legs and knock knee deformities were diagnosed by measuring the inter condylar distance and inter malleolar distance in erect standing position, flat foot deformity was diagnosed by the simple wet test and by observing the foot impression the conclusion was derived whether the participants has a normal or a flat foot arch. The main objective of the study was to determine the postural deformities (kyphosis, Scoliosis, bow legs, knock knee and flat foot) and its effect on selected physical fitness components (Agility, Explosive leg Strength, Speed). Mean, standard deviation, percentile and fisher exact test were applied for data computation and systematic processing with respect to statistical procedures of the study. The following finding and conclusions were derived.

Table no.1 shows the distribution of study participant according to their age group, out of 300 school children, 30 (10 %) of the school children were of 9.83 mean age, 189 (63
%) of the samples were of 11.51 mean age, 81(27 %) of the samples were of 13.07 mean age and the study participants age range was 9.71 – 13.83.

Table no.2 Shows that out of 300 school children, 51 (17 %) of the participants were of class V, 87 (29 %) of the participants were of class VI, 91(30.33 %) of the participants were of VII class, 71 (23.67%) of the participants were of class VIII. Table no. 3 Shows the 22 schools participated in this study in which there were 4 government schools, 11 government granted schools, 7 private schools. Among the 300 school participants, 50 (16.67%), 160 (53.33 %), 90 (30 %) of the participants belongs to government schools, government granted schools and private schools, respectively. Table no.4 Among all the 300 study participants, 180 (60%) of the study participants were selected from Aurangabag and 20 (6.67 %) From Jalna, Beed, Hingoli, Parbhani, Nanded, Latur, respectively from each district region. Table no.5 Shows the mean score (S.ds.) weight of age group 9-10 years was 28.09 (6.13) kg, mean score (S.ds.) height of age group 9-10 years was 52.78 (3.37) inches. Mean score (S.ds.) weight of age group 11- 12 years was 32.46(8.09) kg. Mean score (S.ds.) height of age group 11 – 12 was 55.17(3.29) inches. Mean score (S.ds.) weight of age group 13 – 14 was 36.03 (10.52) mean score (S.ds.) of height of age group 13 -14 was 57.68(4.63) Table no. 6 Total 300 school children were selected. According to our study we found 80 (27. %) number of school children were having postural deformities (deformed posture) and 220 (73 %) number of children as normal posture. Table no.7 Of the total deformed participants 74 (92.5 %) of the population were having mild degree of deformity, followed by 6(7.5 %) moderate degree of deformity. Table no. 8 Of the total selected participants 69 (86 %) of the population were having single deformity, followed by 11(14 %) multiple deformity. Table no. 9 Of the total 80 deformed participants, age group 9 -10 years participants were 12 (40%) followed by 11 -12 years age 46 (24.33 %), 13 – 14 years age 22(27.16%). Table no. 10 Of the total 80 deformed participants, class V has 21 (41.17%) no of deformed participants followed by class VI 24 (27.58 %), VII 18(19.78%), VIII 17(23.94%), respectively. Table no. 11 Of the total 80 deformed participants, government schools participants were 8 (16%) followed by government granted schools 39 (24.35%) private Schools 33(36.67%).Table no.12 region wise occurrence of deformity in participants,
Aurangabad 50 (27.78 %), Jalna 6(30 %), Beed 5 (25 %), Hingoli 3 (15%), Parbhani 6(30 %) ,Nanded 2(2.5 %), latur 8 (40 %)  

Table no.13, of the total 80 deformed participants, kyphosis deformity samples were 9(11.25), scoliosis 4 (5%), bow legs 7 (8.75%), knock knee 11(13.75%), flat foot 38 (47.5 %), kyphosis and bow legs 1 (1.25%), bow legs and flat foot 2 (2.50 %) , knock knee and flat foot 7 (8.75 %), scoliosis ,knock knee and flat foot 1 (1.25).  

It was hypothesized that, There would not be postural deformities in school children in Marathwada region of Maharashtra. With regard to postural deformities table no. 6 reveals that out of 300 participants 80 (27 %) of the participants were found to be postural deformed, whereas 220 (73 %) of the participants were having normal posture. Postural deformity is prevalent in school children in Marathwada region of Maharashtra. Thus the hypothesis of the study is rejected.  

It was hypothesized that, There would not be postural deformities in school children with respect to kyphosis in school children in Marathwada region of Maharashtra. With regard to kyphosis deformity table no.13 showed that out of 80 (100 %) deformed participants 9 (11.25 %) were found to be suffering from kyphosis deformity. Kyphosis deformity is prevalent in school children in Marathwada region of Maharashtra. Thus the hypothesis is rejected.  

It was hypothesized that, There would not be postural deformities in school children with respect to scoliosis in school children in Marathwada region of Maharashtra. With regard to scoliosis deformity table no.13 showed that out of 80 (100 %) deformed participants, 4 (5%) were found to be suffering from scoliosis deformity. Scoliosis deformity is prevalent in school children in Marathwada region of Maharashtra. Thus the hypothesis is rejected.  

It was hypothesized that, There would not be postural deformities in school children with respect to bow legs in school children in Marathwada region of Maharashtra. With regard to bow legs deformity table no.13 showed that out of 80 (100 %) deformed participants, 7 (8.75%) were found to be suffering from bow legs deformity. Bow legs deformity is prevalent in school children in Marathwada region of Maharashtra. Thus the hypothesis is rejected.  

It was hypothesized that, There would not be postural deformities in school children with respect to knock knee in school children in Marathwada region of Maharashtra. With regard to knock knee deformity table no.13 showed that out of 80(100 %) deformed participants, 11 (14 %) were found to be suffering from knock knee deformity. Knock knee deformity is prevalent in school
children in Marathwada region of Maharashtra. **Thus the hypothesis is rejected. It was hypothesized that**, There would not be postural deformities in school children with respect to flat foot in school children in Marathwada region of Maharashtra. With regard to flat foot deformity table no.13 showed that out of 80(100%) deformed participants, 38 (47%) were found to be suffering from flat foot deformity. Flat foot deformity is prevalent in school children in Marathwada region of Maharashtra. **Thus the hypothesis is rejected**. **It was hypothesized that**, There would not be postural deformities in school children in Marathwada region of Maharashtra. With regard to flat foot deformity table no.13 showed that out of 80(100%) deformed participants, 38 (47%) were found to be suffering from flat foot deformity. Flat foot deformity is prevalent in school children in Marathwada region of Maharashtra. **Thus the hypothesis is rejected**. **It was hypothesized that**, There would not be significant effect of selected postural deformities on agility of school children in Marathwada region of Maharashtra, In the present study table no .14 showed that the percentile of normal posture participants above 50 percent was 41(18.63%) below 50 percent 179 (81.37%) whereas deformed above 50 percent was 7 (8.75%) and below 50 percent 73 (91.25%) p = 0.04, the result was Significant (p<0.05). **Thus the hypothesis is rejected**. **It was hypothesized that**, There would not be significant effect of selected postural deformities on explosive leg strength of school children in Marathwada region of Maharashtra. In the present study table no .15 showed that the percentile of normal posture participants above 50 percent was 40 (18.18%) below 50 percent 180 (81.81%) whereas deformed above 50 percent was 10 (12.5 %) and below 50 percent 70 (87.5%) p = 0.29, the result is NS (p<0.05) **Thus the hypothesis is accepted. It was hypothesized that**, There would not be significant effect of selected postural deformities on speed of school children in Marathwada region of Maharashtra. In the present study table no .16 showed that the percentile of normal posture participants above 50 percent was 96 (43.63%) below 50 percent 124 (56.37%) whereas deformed above 50 percent was 3 (3.75 %) and below 50 percent 77 (96.25 %) p = 0.00, the result is Significant (p<0.05) **Thus the hypothesis is rejected**. **It was hypothesized that**, There would not be significant effect of kyphosis deformity on agility of school children in Marathwada region of Maharashtra. In the present study table no.17 showed that the percentile of normal posture participants above 50 percent was 41 (18.63%) below 50 percent 179 (81.37 %) whereas deformed above 50 percent was 1 (11.22 %) and below 50 percent 8 (88.88 %) p = 0.89, the result is NS (p<0.05) **Thus the hypothesis is accepted. It was hypothesized that**, There would not be significant effect of kyphosis deformity on explosive leg strength of school children in Marathwada region of Maharashtra. In the present study table no.18 showed that the
percentile of normal posture participants above 50 percent was 40 (18.18%) below 50 percent 180 (81.81 %) whereas deformed above 50 percent was 1 (11.11 %) and below 50 percent 8 (88.89 %) p = 0.36, the result is NS (p<0.05) Thus the hypothesis is accepted. It was hypothesized that, There would not be significant effect of kyphosis deformity on speed of school children in Marathwada region of Maharashtra. In the present study table no .19 showed that the percentile of normal posture participants above 50 percent was 96 (43.63%) below 50 percent 124 (56.37 %) whereas deformed above 50 percent was 0 (0 %) and below 50 percent 9 (100 %) p = 0.01, the result is Significant (p<0.05) Thus the hypothesis is rejected. It was hypothesized that, There would not be significant effect of scoliosis deformity on agility of school children in Marathwada region of Maharashtra. In the present study table no.20 showed that the percentile of normal posture participants above 50 percent was 41(18.63%) below 50 percent 179 (81.37 %) whereas deformed above 50 percent was 0 (0 %) and below 50 percent 6 (100 %) p = 0.59, the result is NS (p<0.05) Thus the hypothesis is accepted. It was hypothesized that, There would not be significant effect of scoliosis deformity on explosive leg strength of school children in Marathwada region of Maharashtra. In the present study table no.21 showed that the percentile of normal posture participants above 50 percent was 40 (18.18%) below 50 percent 180 (81.81 %) whereas deformed above 50 percent was 1 (16.67 %) and below 50 percent 5 (83.33 %) p = 0.96, the result is NS (p<0.05) Thus the hypothesis is accepted. It was hypothesized that, There would not be significant effect of scoliosis deformity on speed of school children in Marathwada region of Maharashtra. In the present study table no.22 showed that the percentile of normal posture participants above 50 percent was 96 (43.63%) below 50 percent 124 (56.37 %) whereas deformed above 50 percent was 0 (0 %) and below 50 percent 6 (100 %) p = 0.03, the result is Significant (p<0.05) Thus the hypothesis is rejected. It was hypothesized that, There would not be significant effect of bow legs deformity on agility of school children in Marathwada region of Maharashtra. In the present study table no.23 showed that the percentile of normal posture participants above 50 percent was 41 (20.29%) below 50 percent 162 (79.71 %) whereas deformed above 50 percent was 1 (9.01 %) and below 50 percent 10 (90.09 %) p = 0.22, the result is NS (p<0.05) Thus the hypothesis is accepted. It was hypothesized that, There would not be significant effect
of bow leg deformity on explosive leg strength of school children in Marathwada region of Maharashtra. In the present study table no.24 showed that the percentile of normal posture participants above 50 percent was 40 (19.80%) below 50 percent 162 (80.20 %) whereas deformed above 50 percent was 0 (0 %) and below 50 percent 11 (100%) p = 0.22, the result is NS (p<0.05) Thus the hypothesis is accepted. It was hypothesized that, There would not be significant effect of bow leg deformity on speed of school children in Marathwada region of Maharashtra. In the present study table no.25 showed that the percentile of normal posture participants above 50 percent was 85 (42.07%) below 50 percent 155 (57.93 %) whereas deformed above 50 percent was 0 (0 %) and below 50 percent 11 (100%) p = 0.03, the result is Significant (p<0.05) Thus the hypothesis is rejected. It was hypothesized that, There would not be significant effect of knock knee deformity on agility of school children in Marathwada region of Maharashtra. In the present study table no.26 showed that the percentile of normal posture participants above 50 percent was 41 (18.63%) below 50 percent 179 (81.37%) whereas deformed above 50 percent was 0 (0 %) and below 50 percent 20 (100%) p = 0.29, the result is Significant (p<0.05) Thus the hypothesis is rejected. It was hypothesized that, There would not be significant effect of knock knee deformity on explosive leg strength of school children in Marathwada region of Maharashtra. In the present study table no.27 showed that the percentile of normal posture participants above 50 percent was 40 (18.18%) below 50 percent 180 (81.82%) whereas deformed above 50 percent was 0 (0 %) and below 50 percent 20 (100%) p = 0.03, the result is Significant (p<0.05) Thus the hypothesis is rejected. It was hypothesized that, There would not be significant effect of knock knee deformity on speed of school children in Marathwada region of Maharashtra. In the present study table no .28 showed that the percentile of normal posture participants above 50 percent was 96 (43.63%) below 50 percent 124 (56.37%) whereas deformed above 50 percent was 0 (0 %) and below 50 percent 20 (100%) p = 0.00, the result is Significant (p<0.05) Thus the hypothesis is rejected. It was hypothesized that, There would not be significant effect of Flat foot deformity on agility of school children in Marathwada region of Maharashtra. In the present study table no.29 showed that the percentile of normal posture participants above 50 percent was 41(18.63%) below 50 percent 179 (81.37%) whereas deformed above 50 percent was 7
Thus the hypothesis is accepted. It was hypothesized that, There would not be significant effect of flat foot deformity on explosive leg strength of school children in Marathwada region of Maharashtra. In the present study table no.30 showed that the percentile of normal posture participants above 50 percent was 40 (18.18%) below 50 percent 180 (81.82%) whereas deformed above 50 percent was 7(14.59 %) and below 50 percent 41 (85.41%) p = 0.67, the result is NS (p<0.05) Thus the hypothesis is accepted. It was hypothesized that, There would not be significant effect of flat foot deformity on speed level of school children in Marathwada region of Maharashtra. In the present study table no .31 showed that the percentile of normal posture participants above 50 percent was 96(43.63%) below 50 percent 124 (56.37%) whereas deformed above 50 percent was 8 (16.67 %) and below 50 percent 40 (83.33%) p = 0.00, the result is NS (p<0.05) Thus the hypothesis is rejected.

Finally, This research may Inform policies and practices designed to improve the awareness in postural habits, postural deformities like kyphosis,scoliosis,bow legs ,knock knee, flat foot and their effect on physical fitness components agility, explosive leg strength and speed among school children , administrators ,councilors ,teachers, parents ,management and other member of the faculty to know its significance and it will ultimately enhance the quality of school childrens life.

Findings of this study will be implication for health professionals, orthpaedics surgeons. It will provide findings for further research work in orthopaedics. As health professionals become aware of deformities, they will be better able to structure prevention and treatment for these deformities .This study will add to the body of knowledge regarding different type of postural deformities prevalent in school children and its effect on their physical fitness. Physical educator and Sports trainers should give the focus on posture and its strategies to reduce poor or bad posture problems among school students. This research will provide valuable information for a better understanding of causes of postural deformities in school childrens. This study will also provide guidelines to parents, Coaches, physicians, physical educationist and sports trainers that how to
improve the awareness regarding body posture. It will also provide valuable information for a better understanding of posture related concepts. It will be interesting study for clinicians, sports physicians and those interested in fitness and orthopaedics.