



P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (ISRA): 5.38
IJPESH 2019; 6(3): 260-262
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www.kheljournal.com
Received: 21-03-2019
Accepted: 23-04-2019

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A comparison of selected physical fitness components among postural deformities school going students

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Abstract

The main purpose of the study is to find the comparison of selected physical fitness components among postural deformities school going students. The subject for the study was selected from different schools of Yavatmal District (Maharashtra State). The subjects was selected by using purposive sampling method. Subjects were selected from the school children of 6th and 7th standard of Yavatmal area. (20) subjects with bowlegs, (20) subjects with knock-knees, (20) subjects with Flat foot and (20) subjects with Normal etc. Total hundred (100) students from different schools had undergone the Wet Foot print test and Plumb Line test. The data on physical fitness obtained from the subjects was statistically analyzed by using descriptive statistic, one-way analysis of variance. Post-Hoc test was applied and f-ratio was found significant. For the hypothesis, level of significance was set at .05 level.

Result: 1) There was significant difference among the means of bow legs, knock-knees, flat foot and normal students of speed and muscular endurance and not significant difference found in explosive strength.

Keywords: Postural deformities, physical fitness

Introduction

Our body makes countless changes throughout the day as it adjusts to gravitational forces. This is normal and seldom becomes a problem. However if a person has an injury; maintains a certain position for a prolonged period of time; or overuses a body areas; the body's ability to return to a normal balanced state may be impaired. The forces of gravity and the balance of the body against it, is the fundamental determining factor in one's posture or upright position. Consider the muscular system as an orchestra, that creates movement, if some of the instruments are not tuned then the effect becomes widespread throughout the performance. It's fair to say that not many of us have ideal postural alignment, however when we consider how many of us have ongoing problems that are only temporary relieved by treatment then we must take a more serious look at the overall picture. As we stand and move around on two legs the first part of the body to look at for correct alignment are the feet, and more often we find our problems start from there. The human foot was designed to walk on soft, natural 4 degree angle. Unfortunately, we give our feet a daily pounding by walking and standing on unnatural hard surfaces like pavements and floors. This causes our feet to roll inwards to gain ground contact and the arches to flatten-a condition called excessive pronation. Poor alignment of the feet and legs can cause wear and tear to other parts of the body, often disrupting normal knee function and hip alignment as well as increasing forces on muscles in the lower back ^[1]. Researcher has led to a lot of school-going student developmental distortion and poor posture because of their sitting, standing, walking, and mostly the weight of the school bag.

Methodology

The subject for the study was selected from different schools of Yavatmal District (Maharashtra State). The subjects was selected by using purposive sampling method. Subjects were selected from the school children of 6th and 7th standard of Yavatmal area. (20) subjects with bowlegs, (20) subjects with knock-knees, (20) subjects with Flat foot and (20) subjects with Normal etc. Total hundred (100) students from different schools had undergone the Wet Foot print test and Plumb Line test. The criteria measures selected to collect the data for testing of hypothesis given below. The selected variables test and tools are shown in Table 1.

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Table 1: Variables test and tools

Sr. No.	Variables	Test	Tools
1.	Bow legs	Plumb Line Test	Scale, Measuring Tape, Plumb
2.	Knock-knees		
3.	Flat foot	Wet Foot Print Test	Water and scale
4.	Speed	50 Yard Run Test	Measuring Tape, Marked Track, Stopwatch
5.	Explosive strength	Standing Broad Jump	Measuring Tape, Jumping pit
6.	muscular endurance	Squat muscular endurance test	Score Sheet

Statistical analysis

The data on physical fitness obtained from the subjects was statistically analyzed by using descriptive statistic, one-way analysis of variance. Post-Hoc test was applied and f-ratio was found significant. For the hypothesis, level of significance was set at .05 level.

Table 2: Descriptive statistic of physical fitness components among postural deformities school going students

Variables	Group	Mean	SD
Speed	Bow legs	9.115	1.35385
	Knock-knees	10.57	0.27357
	Flat foot	8.155	0.59954
	Normal	7.775	0.81491
Explosive strength	Bow legs	5.208	0.6573
	Knock-knees	5.0025	0.81253
	Flat foot	4.8955	0.73855
	Normal	5.291	0.70883
Muscular endurance	Bow legs	19.8	2.26181
	Knock-knees	14.3	3.98814
	Flat foot	21.85	3.43779
	Normal	23.9	3.11025

Table 3: Analysis of variance of speed among postural deformities school going students

Source of variation	SS	df	MS	F
Between groups	93.11	3	31.04	42.354*
Within groups	55.69	76	0.73	

*Significant at .05 level of significance F.05 (3, 76) = 2.725

Table-3 reveals that there was significant difference between the means of bow legs, knock-knees, flat foot and normal students of speed. The calculated 'F' was 42.354 whereas tabulated 'F' was 2.725. Calculated 'F' greater than the tabulated 'F', which shows significance in bow legs, knock-knees, flat foot and normal students of speed. Therefore, there is need of post hoc test.

Table 4: Post hoc test table shows mean difference of speed among postural deformities school going students

Bow legs	Knock-knees	Flat foot	Normal	M.D.	C.D.
9.115	10.570			1.455*	0.455
9.115		8.155		0.960*	0.455
9.115			7.775	1.340*	0.455
	10.570	8.155		2.415*	0.455
	10.570		7.775	2.795*	0.455
		8.155	7.775	0.380	0.455

Table-4 clearly revealed that significant difference was found between the means of bow legs and knock knees students, bow legs and flat foot students, bow legs and normal students, knock-knees and flat foot students, knock-knees and normal students, flat foot and normal students as the mean difference of above was greater than the critical differences. Insignificant difference was found between the means of flat foot and normal students as the mean difference was less than the critical difference.

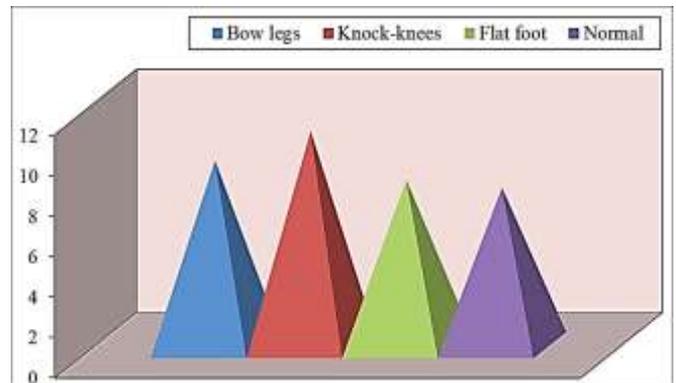


Fig 1: Comparison of the means of speed among postural deformities school going students

Table 5: Analysis of variance of explosive strength among postural deformities school going students

Source of variation	SS	df	MS	F
Between groups	1.99	3	0.66	1.239
Within groups	40.66	76	0.54	

*Significant at .05 level of significance F.05 (3, 76) = 2.725

Table-5 reveals that there was insignificant difference between the means of bow legs, knock-knees, flat foot and normal students of explosive strength. The calculated 'F' was 1.239 whereas tabulated 'F' was 2.725. Calculated 'F' less than the tabulated 'F', which shows insignificance in bow legs, knock-knees, flat foot and normal students of explosive strength. Therefore, there is no need of post hoc test.

Table 6: Analysis of variance of muscular endurance among postural deformities school going students

Source of variation	SS	df	MS	F
Between groups	1023.14	3	341.05	32.088
Within groups	807.75	76	10.63	

*Significant at .05 level of significance F.05 (3, 76) = 2.725

Table-6 reveals that there was significant difference between the means of bow legs, knock-knees, flat foot and normal students of muscular endurance. The calculated 'F' was 32.088 whereas tabulated 'F' was 2.725. Calculated 'F' greater than the tabulated 'F', which shows significance in bow legs, knock-knees, flat foot and normal students of muscular endurance. Therefore, there is need of post hoc test.

Table 7: Post hoc test table shows mean difference of muscular endurance among postural deformities school going students

Bow legs	Knock-knees	Flat foot	Normal	M.D.	C.D.
19.800	14.300			5.500*	1.732
19.800		21.850		2.050*	1.732
19.800			23.900	4.100*	1.732
	14.300	21.850		7.550*	1.732
	14.300		23.900	9.600*	1.732
		21.850	23.900	2.050*	1.732

Table-7 clearly revealed that significant difference was found between the means of bow legs and knock knees students, bow legs and flat foot students, bow legs and normal students, knock-knees and flat foot students, knock-knees and normal students, flat foot and normal students, flat foot and normal as the mean difference of above was greater than the critical differences.

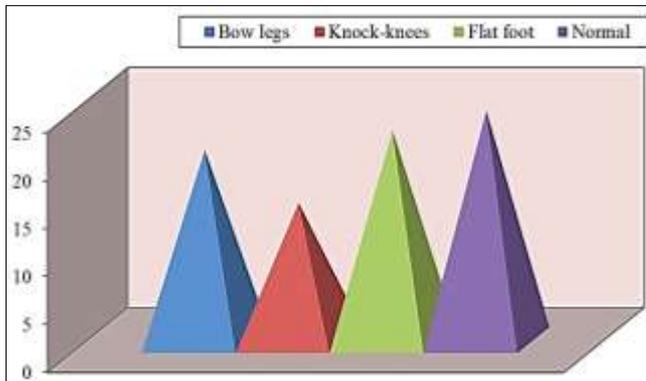


Fig 2: Comparison of the means of muscular strength among postural deformities school going students

Conclusion

On the basis of the result drawn with the mentioned methodology the following conclusion were sougheed out.

1. There was significant difference among the means of bow legs, knock-knees, flat foot and normal students of speed.
2. There was insignificant difference among the means of bow legs, knock-knees, flat foot and normal students of explosive strength.
3. There was significant difference among the means of bow legs, knock-knees, flat foot and normal students of muscular endurance.

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