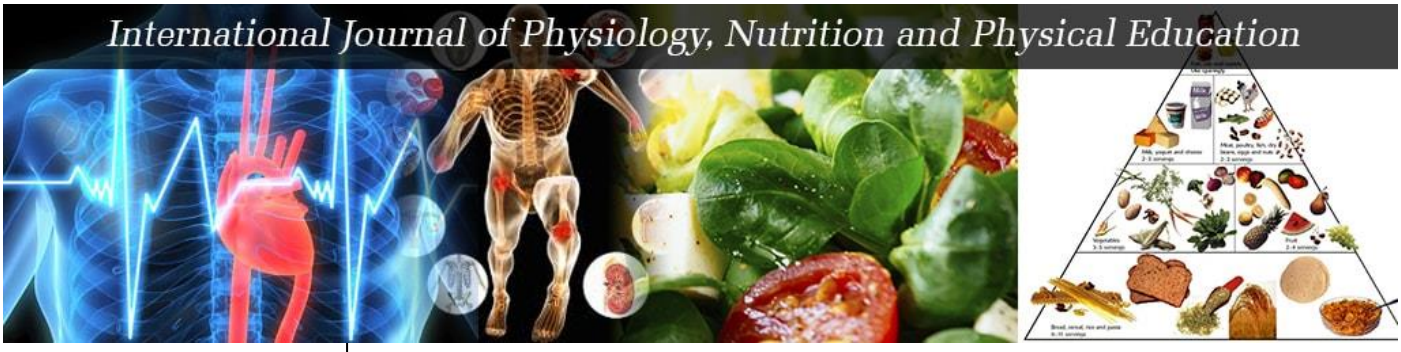

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A study of lower limb deformities with physiological variables prevalence in school going children's in south Kashmir region of Kashmir division

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Abstract
The present study flashes light on a study of lower limb deformities with physiological variables prevalence in school going children's in South Kashmir region of Kashmir division. The components chosen were distance between lower extremities, heart rate respiratory rate and vital capacity among school going children in different lower limb deformities (knock knees, bow legs and flat foot) of different schools of south Kashmir region of Kashmir division. The study was conducted on 300 male school going children as subjects and 100 subjects were selected from each deformity category i.e. 100 from knock knees, 100 from bow legs and100 from flat foot through purposive sampling method. The age of the subjects were ranging from 10-15 years. The collected data on selected criterion variables were statistically analyzed by using one-way ANOVA to find out the significant difference, whenever the interaction effect was found to be significant the simple effect and then least significant difference (LSD) post hoc test was applied to find out the critical difference. In all the cases 0.05 level of significance was fixed to test the hypothesis. Findings disclose that significant difference in distance between lower extremities while as insignificant difference was found between the Heart Rate, Respiratory Rate and Vital capacity. The data will serve as a tool to promote awareness among masses to improve the deformities at earlier stages. The study concludes with recommendations for an appropriate evaluative measures and early intervention programmes for such people.

Keywords: Knock knees, bow legs, flat foots, distance between lower extremities, heart rate, respiratory rate and vital capacity

Introduction
Bad posture is a posture that causes some muscles to tighten or shorten, while others lengthen and weaken, usually as a result of one's daily activities. This can lead to pain, injury or other health problems.

Common causes of poor condition can be traced to either genetic (inherited) factors or environmental factors. Sometimes a person's poor condition can be due to inherited factors; In other words, a person can come into this world with physical defects due to defective genes or physical trauma to the fetus. For example, some individuals are born with abnormally long, crooked spine, defective, bent arms, club legs, weak muscles, or bent legs, or congenital anomalies. Genetic abnormalities can be easily corrected even in infancy or childhood, but depending on the severity of the abnormalities and the degree and scope of the medical care provided, they can leave some scars on the affected person.

Many postural disorders occur mainly due to various environmental factors such as:

Malnutrition can be a factor contributing to poor health, especially in infancy and early childhood. Muddies is caused only by malnutrition. The body's ability to resist disease is significantly reduced, leading to increased risk of injury and deformity.

To most people, being holy is likely to be a defect in sleeping, walking, or sitting, or a bad habit. For example, sitting or standing frequently in an uncomfortable position at work, while traveling, or at other places, mainly due to compulsion, is responsible not only for the injury but also for the bad condition. Wearing too tight or unconventional clothing (clothing) or tight shoes is also a cause of some posture distortion. Similarly, people who are tall often walk with their heads down and stand for hours to perform some strange duties.

Even if he is moving the weight of the body on one foot or the other, the vertical position causes the "wrinkled" position to deteriorate. Fatigue and worsening of general weakness of muscles and bones and nerves

Methodology

Selection of Subjects

For the purpose of the study 300 male students were selected by purposive sampling method from different schools of south Kashmir region of Kashmir division. The age of the subjects was ranging from 10-15 years.

Collection of Data

The necessary data was collected by administrating the tests for measuring the selected variables. Before collecting the data, the subjects were given a chance to practice the prescribed tests so that they should become familiar with the tests and know exactly what is to be done. The data was collected after administrating the test on the selected subjects of study from different schools of south Kashmir region of Kashmir division. After collection of data the tabulation and statistical analysis was arranged in a prescribed manner.

Analysis and Interpretation of Data

The subjects for this study were selected from different schools of south Kashmir region of Kashmir division. A total of 300 subjects were selected, 100 from each deformity category i.e. 100 from knock knees, 100 from bow legs and 100 from flat foot. The age of the subjects were ranging from 10-15 years. The level of significance was set at 0.05 and one-way ANOVA was applied to compare the difference between the groups. It was hypothesized that there was significant difference in Distance between lower extremities, Heart Rate, Respiratory Rate and Vital Capacity among school going children in different deformities categories.

Results

The results pertaining to the study are present in the following tables.

Table 1: Mean value of Distance between lower Extremities among school going children in different lower limb deformities Knock Knees, Bow Legs and Flat Foot.

Groups	No. of Subjects	Sum	Average	Variance
Knock Knees	100	816.3	8.163	1.807809
Bow Legs	100	898.1	8.898	2.285595
Flat Foot	100	405.1	4.051	1.836464

Table 1 reveals the Distance between lower extremities among school going children in different postural deformities. The above data indicate that children with Bow Legs have better distance between lower extremities because the mean value of Bow Legs is greater than other two categories. The difference in the distance between lower extremities of different deformities children is shown below graphically.

There is mean difference in distance between lower extremities among school going children in different postural deformities. Whether it is significant or not it can be shown by using special statistical technique 'F' test (ANOVA).

Graphical representation of distance between lower extremities among school going children in different lower limb deformities (Knock Knees, Bow Legs and Flat Foot)

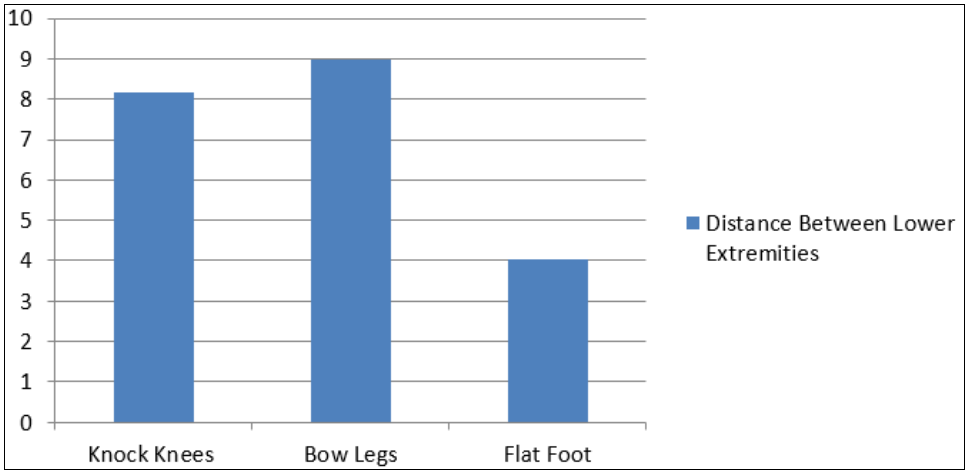

Fig 1: Distance between lower extremities

Table 2: Showing one way analysis of variance (ANOVA) in distance between lower extremities among school going children with different lower limb deformities (Knock Knees, Bow Legs and Flat Foot).

Source of Variation	SS (sum of squares)	DF	MS	F
Between Groups	1396.086	K-1 3-1=2	698.0428	353.1493
Within Groups	587.0569	N-K 300-3=297	1.976623	
Total	1983.143	299		

*Significant at 0.05level, Tab F (2,297) =3.02

Table 2 reveals that 'F' at degree of freedom between groups (dfb) is shown by the formula K-1 where 'K' is the number of groups which are 3 so it becomes 3-1=2. '

F' at degree of freedom within group (dfw) is shown by the formula N-K, where 'N' is total number of subjects in all groups and 'K' is number of groups which becomes 300-3=297. So 'F' test at 2 and 297 is 3.02 which is also called tabulated 'F'.

In the given table the value of tabulated 'F' is 3.02 and the value of calculated 'F' is 353.1493 which is greater than tabulated 'F' at 0.05 level of significance so it is said that there is significant difference in distance between lower

extremities among school going children with deformities knock knees, bow legs and flat foot. Hence the researcher's hypothesis is accepted.

Table 3: Post Hoc Means Comparison of Variance of Distance Between lower Extremities Test among Knock Knees, Bow Legs and flat Foot deformities children

Knock Knees	Bow Legs	Flat Foot	Mean Difference	Critical Difference
8.163	8.981		0.818	0.394
	8.981	4.051	4.93	
8.163		4.051	4.112	

From table 3 of Post Hoc means comparison, it is clearly evident that in Distance between Lower Extremities test among knock knees and bow legs, bow legs and flat foot, knock knees and flat foot students are significantly different. Since the mean difference in distance between lower extremities test for school going children among knock knees and bow legs, Bow legs and flat foot, knock knees and flat foot students were 0.818, 4.93, 4.112 respectively and all were significantly greater than the critical difference 0.394.

Table 4: Mean value of Heart Rate among school going children in different lower limb deformities (Knock Knees, Bow Legs and Flat Foot)

Groups	Count	Sum	Average	Variance
Knock Knees	100	7458	74.58	19.6602
Bowlegs	100	7421	74.21	17.90495
Flat Foot	100	7415	74.15	18.08838

Table 4 reveals the heart rate among school going children in different lower limb deformities. The above data indicate that children with knock knees have better heart rate because the mean value of knock knees is greater than other two categories. The difference in the heart rate of different lower limb deformities among children is shown below graphically.
There is mean difference in heart rate among school going children in different lower limb deformities. Whether it is significant or not it can be shown by using special statistical technique 'F' test (ANOVA).
Graphical representation of heart rate among school going children in different lower limb deformities (Knock Knees, Bow Legs and Flat Foot)

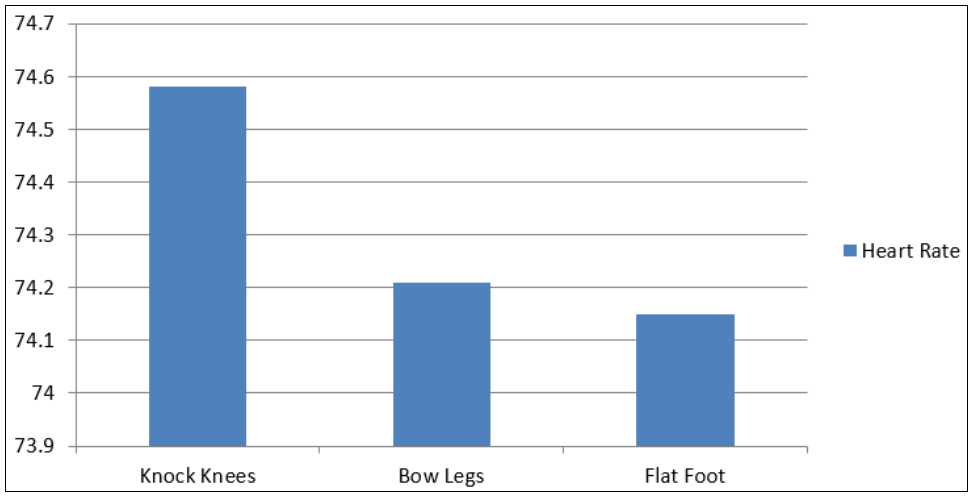

Fig 2: Heart rate

Table 5: Showing one way analysis of variance (ANOVA) in heart rate among school going children with different lower limb deformities (Knock Knees, Bow Legs and Flat Foot)

Source of Variation	SS (sum of squares)	DF	MS	F
Between Groups	10.84667	K-1 3-1=2	5.423333	0.292344
Within Groups	5509.7	N-K 300-3=297	18.55118	
Total	5520.547	299		

*Significant at 0.05level, Tab F (2,297) =3.02

Table 5 reveals that 'F' at degree of freedom between groups (dfb) is shown by the formula K-1 where 'K' is the number of groups which are 3 so it becomes 3-1=2.
'F' at degree of freedom within group (dfw) is shown by the formula N-K, where 'N' is total number of subjects in all groups and 'K' is number of groups which becomes 300-3=297. So 'F' test at 2 and 297 is 3.02 which is also called tabulated 'F'.
In the given table the value of tabulated 'F' is 3.02 and the value of calculated 'F' is 0.292344 which is less than tabulated 'F' at 0.05 level of significance so it is said that there is no significant difference in heart rate among school going children with lower limb deformities knock knees, bow legs and flat foot. Hence the researcher's hypothesis is rejected.

Table 6: Mean value of Respiratory Rate among school going children in different lower limb deformities (Knock Knees, Bow Legs and Flat Foot)

Groups	Count	Sum	Average	Variance
Knock Knees	100	2244	22.44	9.986263
Bow Legs	100	2228	22.28	10.08242
Flat Foot	100	2208	22.08	10.17535

Table 6 reveals the respiratory rate among school going children in different lower limb deformities. The above data indicate that children with knock knees have better respiratory rate because the mean value of knock knees is greater than other two categories. The difference in the respiratory rate of different lower limb deformities among children is shown below graphically.
There is mean difference in respiratory rate among school going children in different lower limb deformities. Whether it is significant or not it can be shown by using special statistical technique 'F' test (ANOVA).
Graphical representation of respiratory rate among school going children in different lower limb deformities (Knock Knees, Bow Legs and Flat Foot)

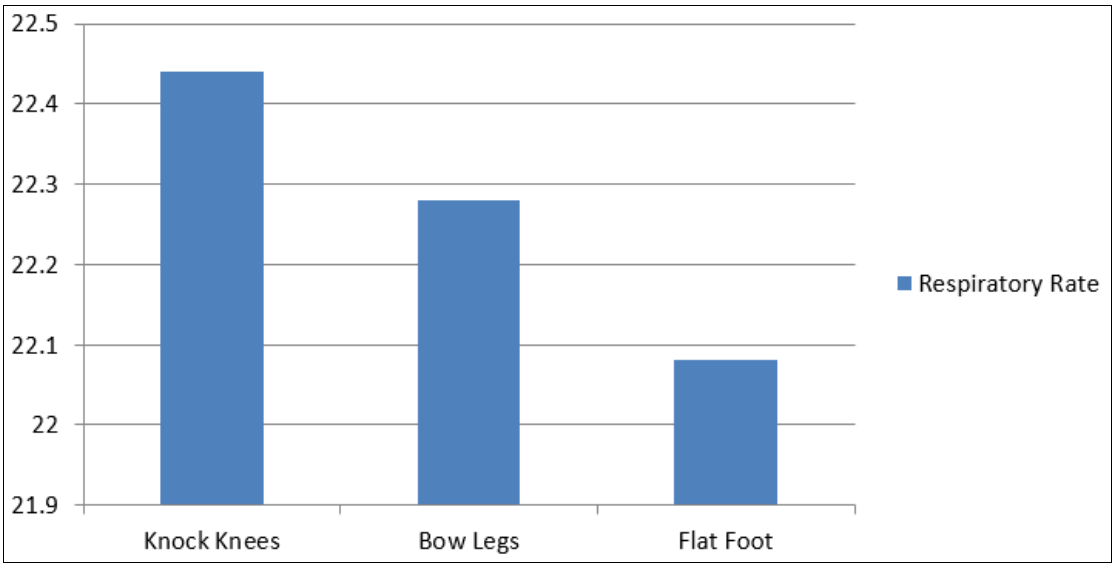

Fig 3: Respiratory rate

Table 7: Showing one way analysis of variance (ANOVA) in respiratory rate among school going children with different lower limb deformities (Knock Knees, Bow Legs and Flat Foot)

Source of Variation	SS (sum of squares)	DF	MS	F
Between Groups	6.506667	K-1 3-1=2	3.253333	0.322708
Within Groups	2994.16	N-K 300-3=297	10.08135	
Total	3000.667	299		

*Significant at 0.05level, Tab F (2,297) =3.02

Table 7 reveals that 'F' at degree of freedom between groups (dfb) is shown by the formula K-1 where 'K' is the number of groups which are 3 so it becomes 3-1=2.
'F' at degree of freedom within group (dfw) is shown by the formula N-K, where 'N' is total number of subjects in all groups and 'K' is number of groups which becomes 300-3=297. So 'F' test at 2 and 297 is 3.02 which is also called tabulated 'F'.
In the given table the value of tabulated 'F' is 3.02 and the value of calculated 'F' is 0.322708 which is less than tabulated 'F' at 0.05 level of significance so it is said that there is no significant difference in respiratory rate among school going children with lower limb deformities knock knees, bow legs and flat foot. Hence the researcher's hypothesis is rejected.

Table 8: Mean value of Vital Capacity among school going children in different lower limb deformities (Knock Knees, Bow Legs and Flat Foot)

Groups	Count	Sum	Average	Variance
Knock Knees	100	360560	3605.6	129398.6
Bow Legs	100	360000	3600	127121.2
Flat Foot	100	360750	3607.5	128200.8

Table 8 reveals the vital capacity among school going children in different lower limb deformities. The above data indicate that children with flat foot have better vital capacity because the mean value of flat foot is greater than other two categories. The difference in the vital capacity of different lower limb deformities among children is shown below graphically.
There is mean difference in vital capacity among school going children in different lower limb deformities. Whether it is significant or not it can be shown by using special statistical technique 'F' test (ANOVA).
Graphical representation of vital capacity among school going children in different lower limb deformities (Knock Knees, Bow Legs and Flat Foot)

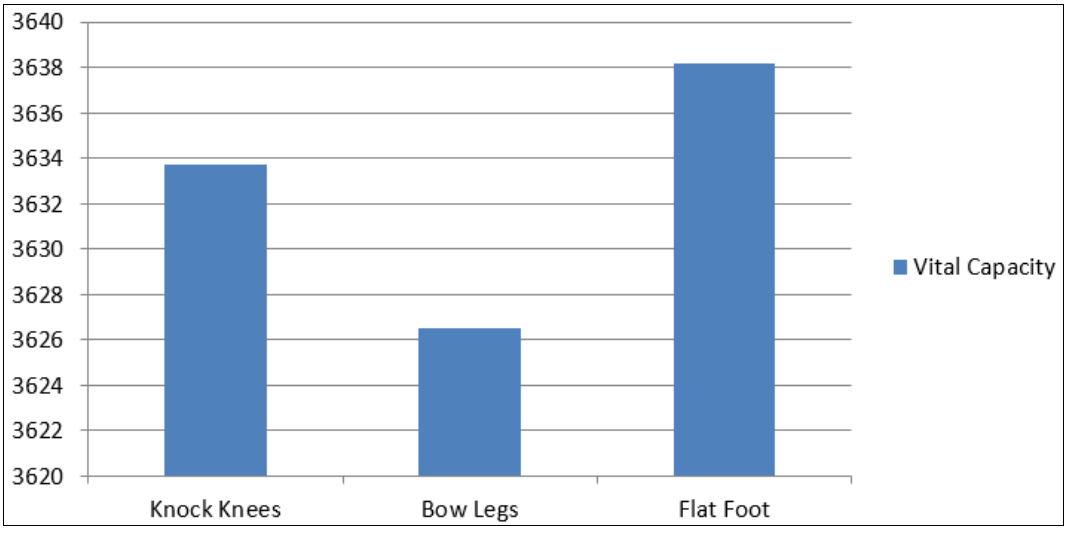

Fig 4: Vital capacity

Table 9: Showing one way analysis of variance (ANOVA) in vital capacity among school going children with different lower limb deformities (Knock Knees, Bow Legs, and Flat Foot)

Source of Variation	SS (sum of squares)	DF	MS	F
Between Groups	3040.667	K-1 3-1=2	1520.33	0.011855
Within Groups	38087339	N-K 300-3=297	128240.2	
Total	38090380	299		

*Significant at 0.05level, Tab F (2,297) =3.02

Table 9 reveals that 'F' at degree of freedom between groups (dfb) is shown by the formula K-1 where 'K' is the number of groups which are 3 so it becomes 3-1=2.

'F' at degree of freedom within group (dfw) is shown by the formula N-K, where 'N' is total number of subjects in all groups and 'K' is number of groups which becomes 300-3=297. So 'F' test at 2 and 297 is 3.02 which is also called tabulated 'F'.

In the given table the value of tabulated 'F' is 3.02 and the value of calculated 'F' is 0.011855 which is less than tabulated 'F' at 0.05 level of significance so it is said that there is no significant difference in vital capacity among school going children with lower limb deformities knock knees, bow legs and flat foot. Hence the researcher's hypothesis is rejected.

Findings

The findings in study shows, that there was significant difference in the distance between lower extremities among school going children in different deformity categories. Which means the researcher's hypothesis is accepted because in the beginning the researcher hypothesis that there will be significant difference in the distance between lower extremities, heart rate, respiratory rate and vital capacity among school going children in different deformity categories.

It is also found that there was no significant difference in the heart rate among school going children in different deformity categories. Which means the researcher's hypothesis is rejected because in the beginning the researcher hypothesis that there will be significant difference in the distance between lower extremities, heart rate, respiratory rate and vital capacity among school going children in different deformity categories.

It is also found that there was no significant difference in the respiratory rate among school going children in different deformity categories. Which means the researcher's hypothesis is rejected because in the beginning the researcher hypothesis that there will be significant difference in the distance between lower extremities, heart rate, respiratory rate and vital capacity among school going children in different deformity categories.

It is also found that there was no significant difference in the vital capacity among school going children in different deformity categories. Which means the researcher's hypothesis is rejected because in the beginning the researcher hypothesis that there will be significant difference in the distance between lower extremities, heart rate, respiratory rate and vital capacity among school going children in different deformity categories.

Conclusion

The researcher initially pre assumed that there will be a significant difference in the distance between lower extremities, heart rate, respiratory rate and vital capacity among school going children in different deformity categories of various schools of south Kashmir region of Kashmir division and after the statistical analysis interpretation of data it was found that there is significant difference in the distance between lower extremities among school going children in different deformity categories of various schools of south Kashmir region of Kashmir division because the calculated 'f' is greater than tabulated 'f' at 0.05 level of significance. Hence the researcher's pre assumed have been accepted.

it was also found that there is no significant difference in the heart rate, respiratory rate and vital capacity among school going children's in different deformity categories of various schools of south Kashmir region of Kashmir division because the calculated 'f' is less than tabulated 'f' at 0.05 level of significance. Hence the researchers pre assumed have been rejected.

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