



International Journal of Physical Education, Sports and Health

P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (ISRA): 5.38
IJPESH 2017; 4(6): 200-202
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www.kheljournal.com
Received: 06-09-2017
Accepted: 07-10-2017

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Analysis of anthropometric and physiological variables among hearing impaired students

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Abstract

Purpose: The purpose of this study was to analysis of anthropometric and physiological variables among hearing impaired students.

Subjects: Eighty hearing impaired students were selected from eight states (Andhra Pradesh n=10, Tamil Nadu n=10, Goa n=10, Kerala n=10, Karnataka n=10, Maharashtra n=10, Orisa n=10 and Pondicherry n=10) who participated in National recreation camp and the camp was organized in Chennai, India during the academic year 2012. The age of the subject ranged from 15-18 years as per the records.

Variables: Four anthropometric (Age, Height, Weight and Chest measurement) and Three Physiological (Pulse Rate, Systolic and Diastolic Blood Pressure) variables were taken. The instruments were Steadio meter, weighing machine, Inch tap and Spigmomanometer to use and all measurements were taken on the subject's.

Statistics: Descriptive statistics (Mean & Standard deviation) and analysis of variance ANOVA were used analyze and to find out the significant difference, if any between the (states) group for selected variables. To test the significance the level of confidence was fixed at .05.

Result: There was a significant difference between various states hearing impaired students on age and height. There was no significant difference between various state hearing impaired students on Weight, Chest measurement, Pulse Rate, Systolic and Diastolic Blood Pressure.

Keywords: Hearing impaired, anthropometry, age, height, weight, chest measurement, pulse, blood pressure

Introduction

The auditory sensory cells (hair cells) contained in the organ of Corti of the cochlea are responsible for the transduction of acoustic input into nerve impulses. Of the two types of hair cells, the inner hair cells are considered the primary transducers and are innervated by more than 90% of the auditory afferent nerve fibers. Outer hair cells mostly receive efferent innervation and serve to enhance the sensitivity to sound stimulation. Several types of supporting cells and auxiliary structures such as the stria vascularis and spiral ligament are critical in maintaining the structural organization and homeostasis of cochlea. When only the outer hair cells are missing, hearing thresholds tend to increase to 40 to 60 dB (Schuknecht 1974) ^[1]. An additional loss of inner hair cells will lead to even higher threshold shifts up to complete deafness. The characteristic pathological feature of NIHL is the loss of hair cells. In temporal bones of human subjects that had been exposed to chronic occupational noise for about 30 years, loss of outer hair cells at the basal turn was the most prominent change, while loss of inner hair cells was limited (Nakamoto, *et al.* 2005) ^[2] Degeneration of the auditory nerve corresponded with loss of outer hair cells (Wang 2002) ^[3] although loss of nerve fibers tends to be slow following the insult to the hair cells. Animal models confirm that the outer hair cells are a primary pathological target in acute NIHL (fig.1), generally followed by destruction of inner hair cells with greater noise exposure (Hirose 2003) ^[4]. With sufficiently high intensity and duration of noise, not only the hair cells but the entire organ of Corti may be disrupted (Ryan 2003).

Anthropometry

Anthropometric techniques are used to measure the absolute and relative variability in size and shape of the human body. Depending on the objective, anthropometric instrumentation may

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include weighing scale, anthropometer, skinfold calipers, body volume tanks, and bioelectrical impedance analyzers. Similarly, radiographic instruments and x-ray scanners such as dual-energy-ray absorption meters and ultrasound densitometers are used for quantifying cortical bone density, bone mass, subcutaneous fat density, and lean body mass (Spencer 1997) [6]. According to James Tanner, formerly Professor of Child Health at the University of London, 'anthropometry was born not of medicine or science, but of the arts, impregnated by the spirit of Pythagorean philosophy (Tanner 1981) [7]. Hence the aim of the study is to analysis the physiological and anthropometric variables among mentally challenged players.

Materials and Methods

Purpose: The purpose of this study was to analysis of anthropometric and physiological variables among hearing impaired students.

Subjects: Eighty hearing impaired students selected from eight states (Andra Pradesh n=10, Tamil Nadu n=10, Goa

n=10, Kerala n=10, Karnataka n=10, Maharashtra n=10, orisa n=10 and Pondicherry n=10) who participated in National Recreation Camp and the camp was organized in Chennai, India during the academic year 2012. The age of the subject ranged from 15-18 years as per the records.

Variables: Four anthropometric (Age, Height, Weight and Chest measurement) and Three Physiological (Pulse Rate, Systolic and Diastolic Blood Pressure) variables were taken. The instruments were Steadio meter, weighing machine, Inch tap and Spigmomanometer to use and all measurements were taken on the subject's.

Statistics: Descriptive statistics (Mean& Standard deviation) and analysis of variance ANOVA were used analyze and to find out the significant difference, if any between the (states) group for selected variables. To test the significance the level of confidence was fixed at.05.

Result of the Study

Table 1

| States | Age | Height | Weight | Chest | Pulse | Systolic | Diastolic |
|---------------|-----------|------------|------------|------------|------------|-----------|-----------|
| Andra Pradesh | 25.8±7.02 | 1.56±9.04 | 49.8±12.12 | 82.3±8.8 | 75±8.55 | 1.13±4.83 | 72±9.18 |
| Tamil Nadu | 15.8±1.61 | 1.68±7.68 | 50.6±7.63 | 78±6.2 | 73.4±3.78 | 1.09±5.67 | 72±9.18 |
| Goa | 15.6±4.06 | 1.51±9.95 | 43.1±14.83 | 77.61±1.16 | 82.41±0.41 | 1.11±9.94 | 74±5.16 |
| Kerala | 20.7±5.14 | 1.61±8.4 | 47.7±10.6 | 80.9±7.48 | 81.2±9.94 | 1.11±8.75 | 73±6.74 |
| Karnataka | 22.2±9.95 | 1.61±11.7 | 48.18.78 | 82±8.36 | 82±9.52 | 1.07±17.6 | 69±7.37 |
| Maharastra | 16.9±4.86 | 1.48±9.02 | 43.6±16.50 | 77.5±12.9 | 82.3±8.45 | 1.02±7.8 | 67±8.23 |
| Orisa | 16±4.21 | 1.51±12.66 | 44.7±6.11 | 80.6±7.7 | 77.6±8.31 | 1.12±9.18 | 73±9.4 |
| Pondicherry | 20±7.94 | 1.61±8.91 | 50.5±11.64 | 82±8.79 | 74.4±5.14 | 1.09±7.37 | 73±8.23 |

Table 2

| Variables | SOV(States) | Sum of Squares | df | Mean Square | F | Sig. |
|-----------|----------------|----------------|----|-------------|--------|------|
| Age | Between Groups | 954.550 | 7 | 136.364 | 3.655* | .002 |
| | Within Groups | 2686.200 | 72 | 37.308 | | |
| | Total | 3640.750 | 79 | | | |
| Height | Between Groups | 3411.488 | 7 | 487.355 | 5.059* | .000 |
| | Within Groups | 6936.500 | 72 | 96.340 | | |
| | Total | 10347.988 | 79 | | | |
| Weight | Between Groups | 662.587 | 7 | 94.655 | .714 | .660 |
| | Within Groups | 9544.900 | 72 | 132.568 | | |
| | Total | 10207.488 | 79 | | | |
| Chest | Between Groups | 303.688 | 7 | 43.384 | .516 | .819 |
| | Within Groups | 6048.300 | 72 | 84.004 | | |
| | Total | 6351.988 | 79 | | | |
| Pulse | Between Groups | 1002.200 | 7 | 143.171 | 2.124 | .052 |
| | Within Groups | 4853.600 | 72 | 67.411 | | |
| | Total | 5855.800 | 79 | | | |
| Systolic | Between Groups | 855.000 | 7 | 122.143 | 1.313 | .257 |
| | Within Groups | 6700.000 | 72 | 93.056 | | |
| | Total | 7555.000 | 79 | | | |
| Diastolic | Between Groups | 398.750 | 7 | 56.964 | .875 | .531 |
| | Within Groups | 4690.000 | 72 | 65.139 | | |
| | Total | 5088.750 | 79 | | | |

Table value at .05 level with df (7, 72) is 3.29.

Table I and II shows the descriptive statistics Age, Height, Weight, Chest measurement, Pulse Rate, Systolic and Diastolic Blood Pressure measurements of hearing impaired students. Results of the ANOVA revealed that there was a significant difference between various states hearing impaired

students on age and height. There was no significant difference between various state hearing impaired students on Weight, Chest measurement, Pulse Rate, Systolic and Diastolic Blood Pressure.

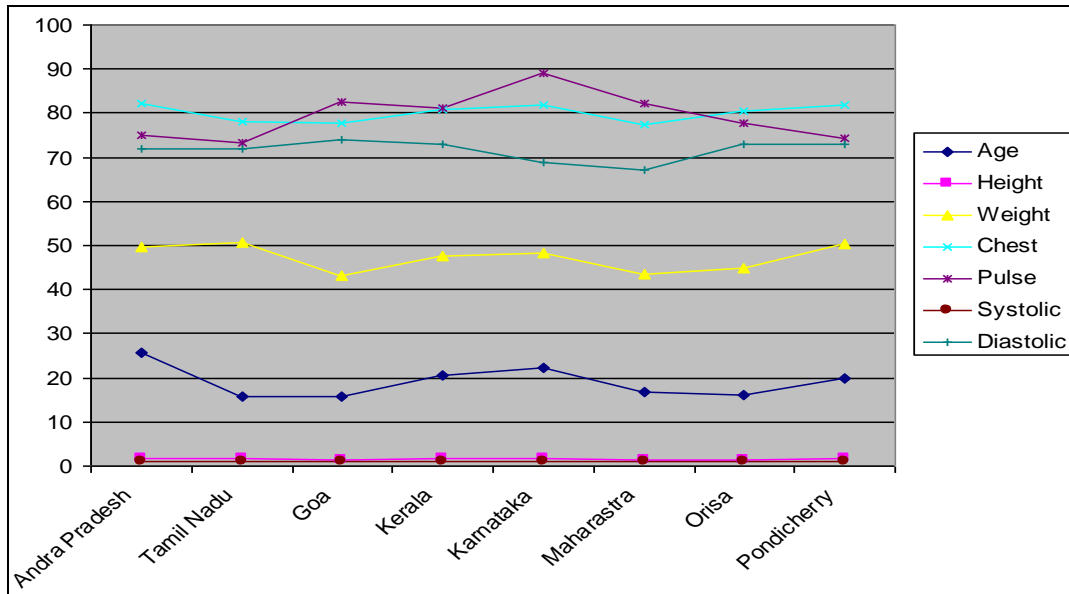


Fig 1: Shows That Comparison of Mean Values of Different States Hearing Impaired Students in Anthropometric and Physiological Variables

Conclusion

From the analysis of data the following conclusions was drawn

- There was a significant difference was occurred among different state hearing impaired students on age and height.
- There was no significant difference between various state hearing impaired students on Weight, Chest measurement, Pulse Rate, Systolic and Diastolic Blood Pressure.

Implication

Hence it would be recommended that hearing impaired students will be selected by considering the anthropometric and physiological variables apart from their recreation and habit training.

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