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Research Article

Posture Analysis by using iPhone App (Posture Zone) in Collegiate – A Pilot Study

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Abstract

Background: Good posture is really important for living healthier and longer. Most people are completely unaware of how much their body is folded forward even when they think they're standing straight. The negative effects of our sitting, slumped over keyboards and phones, are enormous. Posture Zone is a tool for people to benchmark and track postural changes, Improvements, or decline, a common consequence of excessive sitting, injuries and aging.

Aim: To assess postural deviations in collegiate.

Objectives: To evaluate the postural deviation in the college students.

Method: A total number of 60 students age between 17 to 25 years (mean age 19.5) from The Oxford College of Physiotherapy, Bangalore were included in the study.

Study type:

Descriptive study: Postural assessment was taken by using a posture zone iPhone app (free version). Pictures were taken in anterior, posterior and lateral (right and left). On the front/back view, the head result notes how far left or right the head is about midpoint of stance. The shoulder and hip results are how far to the left and right each shoulder/hip is leaning from the center point of where student was standing. The close result has to symmetry on front / back viewed the more balanced body. In the side view, from the midpoint of the feet to pelvis, torso, and head – the number is how far to the right or left each Posture Zone is leaning from the center of the feet. The closer result is to zero the better the balance points of the body.

Conclusion: This study found that significant postural deviation seen in Torso, Pelvis dominant side and head. Participant included in the study were regular users of smart phone.

Keywords: Posture; Posture zone; iPhone apps; Torso; Pelvis; Head

Introduction

The importance of normal upright posture has been proposed since the early 1900 when it was described as a state of balance requiring minimal muscular effort to maintain [1,2]. Posture is an indicator of how long and how well you'll live - Atlanta, Georgia." Good posture is really important for living healthier longer. The negative effects of our sitting society, slumped over keyboards and phones, are enormous.

Posture affects everything from the way you move to body functions, including

Aging, Arthritis, Body symmetry, Fall prevention, Back pain, Neck and shoulder issue, Headaches, Athletic performance, Rehabilitation of injuries Breathing Gastrointestinal efficiency, Cardiovascular performance Appearance Confidence.

The standing posture (Latin - positura - position) is the correct relation of different parts of the body which maintains a balance between supporting structures [3]. However, posture is not an easy subject to study, mainly because postural assessments are still scientifically inaccurate, such as photography, or expensive, such as MRI, whereas others, such as X-ray, involve radiation problems [4].

It is affirmed that the measurement of body angle or distance by photography is the most promising technique to globally assess posture both in the sagittal (two sides) and frontal planes (anterior and posterior views) because photograph acquisition is cheap, fast, and easy.

Posture Zone is a tool for people to benchmark and track posture changes, Improvements, or decline, a common consequence of excessive sitting, injuries and aging.

Objectives and need of the study

To assess feasibility of posture zone iPhone App and find out postural deviations in collegiate. Quantitative measurement of postural deviation which helps to determine the need of postural corrections treatment. As it was tested and proved that photogrammetric measurement is a reliable and valid tool for assessment of posture. Hence we felt it necessary to have an approach to evaluate posture by using posture analysis software. Conventional Goniometric

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measurement is a Lengthy process whereas measurement with posture zone iPhone App is Easy applicable in all places and designed set up is not required. Measurement can be recorded and kept for future references and studies. It can give Visual Feedback on deviation and improvement.

Methodology

Study design

A descriptive study to assess postural deviations in collegiate. A total number of 60 students age between 17 to 25 years (mean age 19.5) from The Oxford College of Physiotherapy Bangalore Karnataka were included in the study.

Selection criteria

Inclusion criteria

- The subject's age between 17 to 25 years
- Students of the Oxford College of physiotherapy Bangalore

Exclusion criteria

- Subjects who is not willing to participate

Procedure

Postural assessment was taken by using a posture zone iPhone app (free version). Pictures were taken from 3 meters (300cms) away from the wall in anterior, posterior and lateral (right and left) [5]. On the front/back view, the head result notes how far left or right the head is about midpoint of stance. The shoulder and hip results are how far to the left and right each shoulder/hip is leaning from the center point of where student was standing. The closer result is to symmetry on front/back view the more symmetrical body. In the side view, from the midpoint of the feet to pelvis, torso, and head – the number is how far to the right or left each Posture Zone is leaning from the center of the feet. The closer result is to zero the better the balance points of the body.

Ethical committee and informed consent

The project had ethics approval from The Oxford College of Physiotherapy Review Board on Ethics for Research (TOCPTRBER). And informed consent was obtained from each participant.

Results

Tables 1-3, In this study marked postural deviation is seen in head lateral (right side) with mean 3.32 (SD=1.25). In torso lateral (right side) deviation with mean 2.64 (SD=1.09) and in pelvis significant deviations also in lateral (right side) with mean 4.25 (SD=1.78).

Time taken to measure one person

Average time for measuring for one person posture was recorded as five minutes (Graph 1).

Discussion

There is N Number of application (apps) available for physiotherapy section in android and apple stores. Few applications which was designed well and working for assessing various body signs and symptoms. Posture assessment one of the challenging part in musculoskeletal assessment. Evaluator eyes could not be believed always right. So photographic analysis was identified as the best tool for assess posture. After taken subjects photographs where to be assessed and evaluated would be the next challenging. Posture assessment is the process of benchmarking the appearance of someone's posture with a simple photo and then analyzing balance, alignment of body parts, symmetry of body and motion. This is the crucial first step to improving and strengthening postures. According to Fortin, et al. (2011) direct body measurements can be made by goniometers, Inclinometers and tape. Goniometers and Inclinometers are used to quantify aspects of posture, providing a value in from zero to 360 degrees. However, the results of these tests are questionable because of the measurement errors reported for goniometers and Inclinometers [6].

Studies conducted by Body posture zone committee have shown that poor posture is a major cause of back and neck pain for all ages, and over time, often contributes to digestive, respiratory and cardiopulmonary problems [7]. Hours of hunching over a computer, slouching while texting, slumping while playing video games, sitting at work, at home, and during travel is affecting your posture [7].

Table 1: Head.

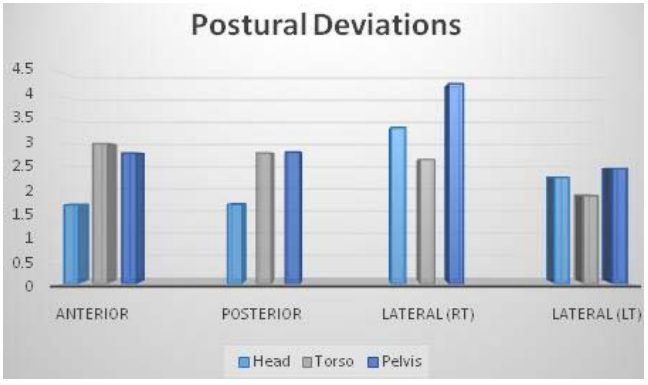
S. No	Deviations	No of people with Deviation	% of people with deviation	Mean deviation [SD]
1	Anterior	22	36.6%	1.67 (SD=0.53)
2	Posterior	29	48.3%	1.68 (SD=0.47)
3	Lateral right	56	93.3%	3.32 (SD=1.25)
4	Lateral left	42	70%	2.26 (SD=0.97)

Table 2: Torso.

S. No	Deviations	No of people with Deviation	% of people with deviation	Mean deviation [SD]
1	Anterior	37	61.6%	2.98 (SD=1.52)
2	posterior	46	76.6%	2.78 (SD=1.19)
3	Lateral right	53	88.3%	2.64 (SD=1.09)
4	Lateral left	28	46.6%	1.87 (SD=0.75)

Table 3: Pelvis.

S. No	Deviations	No of people with Deviation	% of people with deviation	Mean deviation [SD]
1	Anterior	41	68.3%	2.78 (SD=1.40)
2	posterior	43	71.6%	2.80 (SD=0.92)
3	Lateral right	55	91.6%	4.25 (SD=1.78)
4	Lateral left	46	76.6%	2.45 (SD=1.15)



Graph 1: Analysis of Posture in all three directions.

Sacco I, et al. 2007 stated that Quantitative postural assessment is crucial and may help the physician to monitor treatment outcomes. The quantitative posture assessment and the objective measurement of range of motion and joint angles are crucial for the diagnosis, planning and follow-up of the progress and results of a physiotherapeutic treatment for the creation of a postural database for normative comparison [8].

In present study more marked postural deviation is seen in head, torso and pelvis lateral (right side) view. Out of 60 subjects only 3 subjects were left hand dominant so 95% subjects were having right side dominance and subjects were also regular users of smart phones and laptops on an average 3 hours a day. Therefore Postural analysis should be done by use of iPhone apps which helps to find out the deviation in posture in easy way without using any tools. Phone which we are using can be utilized for patient postural evaluation purpose.

This observational study shows that many numbers of subjects have postural deviations which is analysed by using postural iPhone apps Data analysis, which shows that significant deviations are found in the Head, Torso and Pelvis. In Head, right Lateral examination shows marked deviation. In the torso, right lateral examination shows marked deviation. In pelvis, right lateral examination shows marked deviation. Physiotherapist evaluations which are better tool to check the deviations in the posture. Quantitative assessment should examined by use of this applications which helps to clinical therapist fix their management effectively as well documentation.

Conclusion

Now a day's developing technology is part of our life and makes our life easier and we have enough technology to make a very good quantitative postural evaluation possible. Here the findings of the study suggest that posture assessment with use of iPhone App is easier and less time consuming and significant postural deviation seen in significant postural deviation seen in Torso, Pelvis dominant side and head.

Limitation of the Study

Reliability of this application should be examined. The application is freely available in Apple iOS but in android it is payable. This study was done on normal subject. We are not assessed the validity and reliability of the application used in the study. Technical difficulty of this application was not examined well enough in this paper.

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