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"*Joseph's frame*" for Standardization Facial Photographs

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ABSTRACT

Accurate facial analysis has spectrum of uses such as to plan for patients undergoing orthodontic treatment, orthognathic surgery, facial plastic surgery, for the study of normal and abnormal growth and for morphometric investigation. The facial anthropometry plays an important role in the diagnosis of several dysmorphic syndromes. Quantitative assessments of the soft tissues have been performed since a long time by using lateral cephalometry radiographs and several cephalometric analysis. But limitations in these techniques to give an accurate data added other methods such as anthropometry, 2 or 3 dimensional photography, 3- D imaging techniques. Among all these methods, two dimensional photogrammetric has the advantage of being basic, non invasive, cost effective and quick method that requires minimal time and equipment in the assessment of soft tissues, provided these photographs are taken under standardized settings.

Standardization poses a great difficulty to be achieved with normal photographic setups. The literatures on how to go about for a standardized photographs are limited.

Here we discuss a simple setup to take standardized photographs.

TEXT

Photogrammetry has been introduced as an alternative to direct measurements to obtain distances between facial landmarks using both two-dimensional and three-dimensional methods. Obtaining measurements from photographs is less intrusive to the patient and less costly, provides a permanent record of the face that can be accessed at a later time, and offers consistency in longitudinal studies in which different observers with different direct measuring techniques might participate.

With constant upgrading of informatics and communication technology, the standards for data storage and retrieval and information usage, allied with biomedical knowledge, have transformed traditional methods of diagnosis, visualization, and treatment. These efforts were aimed at reducing the time spent on examinations and improving the reliability of measurements. [1,2] Different modalities of diagnosis and treatment control with the use of images for anthropometric evaluation developed over the years include two-dimensional (2D) photography and three-dimensional (3D) reconstruction. 2D photography offers rapid capture of facial images, almost permanent retention, and the opportunity for repeated measurement, but single 2D images are affected adversely by projection, distortion, and pose. [3,4]. As reviewed, the development of different techniques for 3D reproduction of facial topograhy such as ultrasound, laser scanning, holography, computed tomography (CT), magnetic resonance (MR), electromagnetic digitizer, and stereophotogrammetry, significantly changed the process of diagnosis by providing a lot of facial anatomical details. Three-dimensional reconstruction,

which has the potential to compensate for the limitations of a 2D image, has great advantage in the diagnosis of patient abnormalities and for syndrome delineation.

Unfortunately, current devices for facial 3D analysis are costly, impeding their routine clinical use. Additionally, they often need dedicated spaces, which cannot be organized within dental and orthodontic clinics, thus limiting the use of 3D analysis to university laboratories and research centers.

As the use of digital photography and computer imaging increases, morphometric evaluation must become a simple and cost-effective method to assess soft tissue changes in a reliable way.

In addition it has the advantage of being basic, non invasive, cost effective and quick method that requires minimal time and equipment in the assessment of soft tissues, provided these photographs are taken under standardized settings.

Here we build a simple setup which helps for taking standardzided photographs. About the setup. The Part 1 is attached to the wall on which has two wooden railing which are perpendicular to the floor are attached. Part II is a wooden frame which carries a scale setup (two scales attached perpendicular to each other). This part can freely move anteriorly and posteriorly on the wooden railings which was mentioned above. This movement allows to change the position of the scale as per the subject. We have designed a protocol for shooting and printing 1:1 (life size) photographs, which is available with the author.

ACKNOWLEDGEMENTS

Competing Interests:

None

Please state any sources of funding for your research:

None

DOES YOUR STUDY INVOLVE HUMAN SUBJECTS?

No

If your study involves human subjects you MUST have obtained ethical approval.

Please state whether Ethical Approval was given, by whom and the relevant Judgement's reference number .

NOT APPLICABLE

Patient Consent – please state that written patient consent has been obtained to publish clinical photographs. If you have no clinical photographs, please state "not required".

The Journal may request a copy of this consent prior to acceptance

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I, DR. JOSEPH JOHN K POTHANKAT, THE FIRST AUTHOR OF THIS MANUSCRIPT HEREBY STATE THAT ALL THE AUTHORS, WHOSE NAMES HAVE BEEN MENTIONED, HAS VIEWED AND AGREED FOR THIS SUBMISSION

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CAPTIONS TO ILLUSTRATIONS

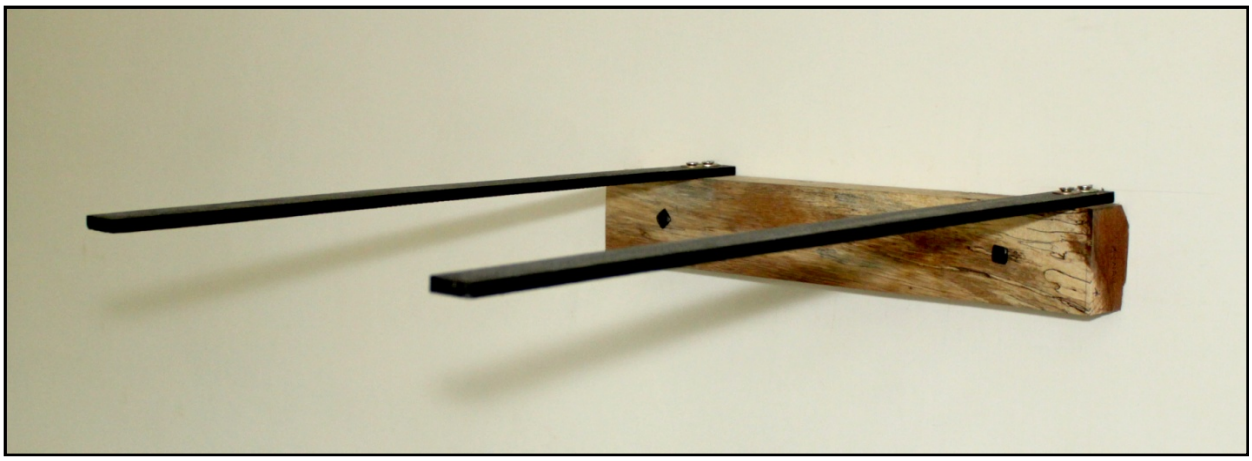

FIG: I PART I, which is attached to the wall, having 2 railings

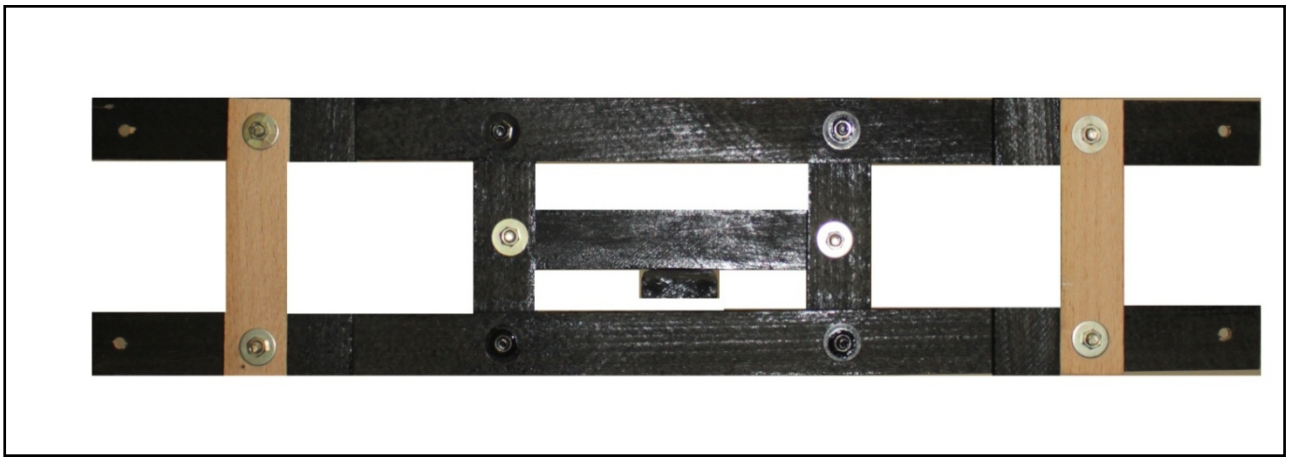

FIG: II PART II, Frame which gives attachment to scale setup

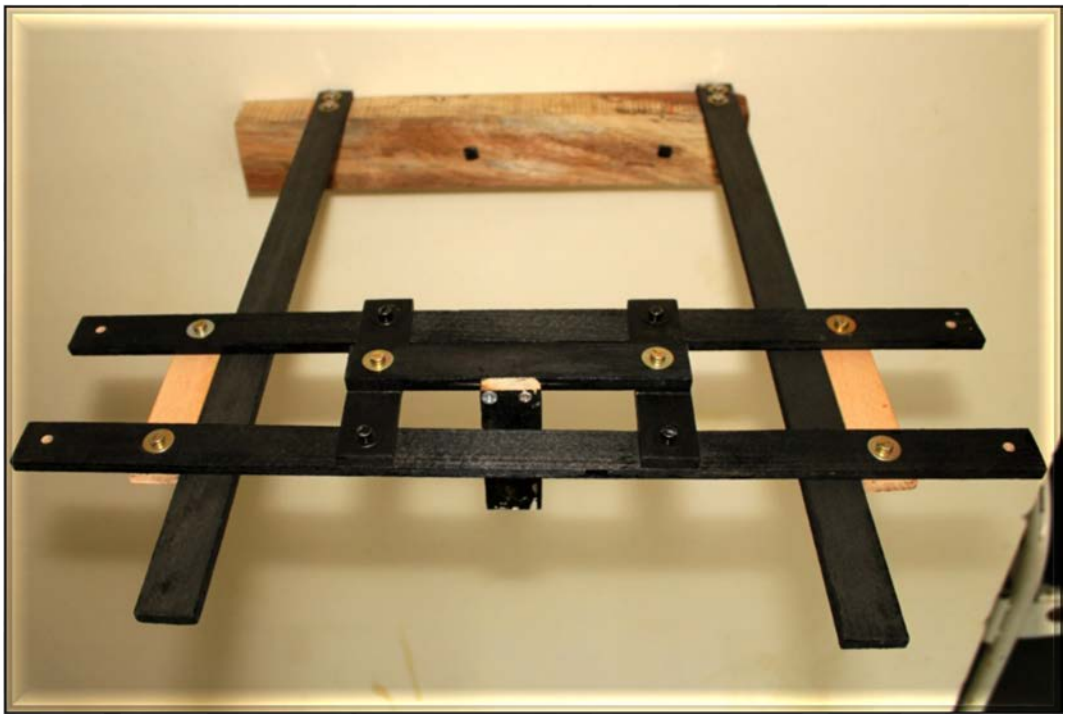

FIG: III PART I & II attached.

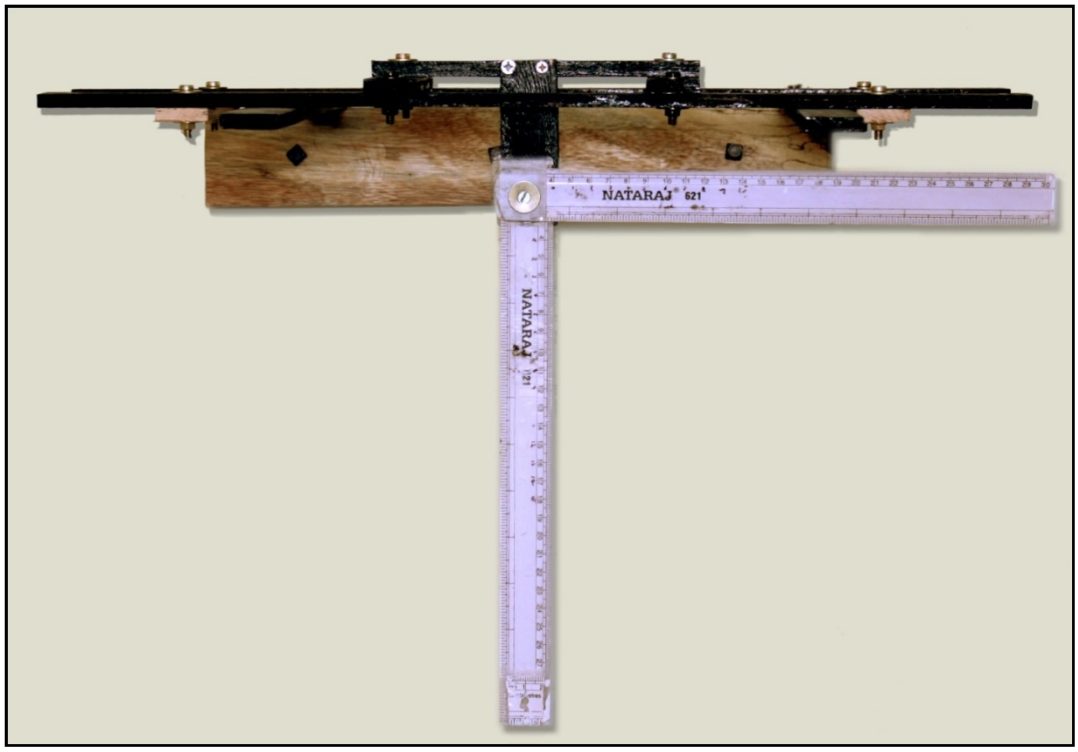

FIG: IV PART I & II attached with scale setup.