

## Accepted Manuscript

Title: Construction and validation of a low cost paediatric pelvis phantom

Authors: Ali Mohammed Ali, Peter Hogg, Safora Johansen, Andrew England



PII: S0720-048X(18)30320-6  
DOI: <https://doi.org/10.1016/j.ejrad.2018.09.015>  
Reference: EURR 8308

To appear in: *European Journal of Radiology*

Received date: 11-5-2018  
Revised date: 10-9-2018  
Accepted date: 12-9-2018

Please cite this article as: Ali AM, Hogg P, Johansen S, England A, Construction and validation of a low cost paediatric pelvis phantom, *European Journal of Radiology* (2018), <https://doi.org/10.1016/j.ejrad.2018.09.015>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## Construction and validation of a low cost paediatric pelvis phantom

Mr. Ali Mohammed Ali<sup>1</sup>, Professor Peter Hogg<sup>1</sup>, Dr. Safora Johansen<sup>2</sup>, Dr. Andrew England<sup>1</sup>

<sup>1</sup>*School of Health Sciences, University of Salford, Salford M6 6PU, United Kingdom.*

<sup>2</sup>Oslo Metropolitan University, Faculty of Health Sciences, Norway.

<sup>2</sup> Department of Oncology, Division of Cancer Medicine, Surgery and Transplantation, Oslo University Hospital, Radiumhospitalet, Oslo, Norway.

### **Corresponding author:**

Mohammed Ali, A

Phone number: +447442541734

Email: a.h.m.a.mohammedali@edu.salford.ac.uk

### **Authors:**

Professor Hogg, P                      Email: [P.Hogg@salford.ac.uk](mailto:P.Hogg@salford.ac.uk)

Dr. Johansen, S                      Email: [saferajo@oslomet.no](mailto:saferajo@oslomet.no)

Dr. England, A                      Email: [A.England@salford.ac.uk](mailto:A.England@salford.ac.uk)

### **ABSTRACT**

**PURPOSE:** Imaging phantoms can be cost prohibitive, therefore a need exists to produce low cost alternatives which are fit for purpose. This paper describes the development and validation of a low cost paediatric pelvis phantom based on the anatomy of a 5-year-old child.

**METHODS:** Tissue equivalent materials representing paediatric bone (Plaster of Paris; PoP) and soft tissue (Poly methyl methacrylate; PMMA) were used. PMMA was machined to match the bony anatomy identified from a CT scan of a 5-year-old child and cavities were created for infusing the PoP. Phantom validation comprised physical and visual measures. Physical included CT density comparison between a CT scan of a 5-year old child and the phantom *and* Signal to Noise Ratio (SNR) comparative analysis of anteroposterior phantom X-ray images against a commercial anthropomorphic phantom. Visual analysis using a psychometric image quality scale (face validity).

Download English Version:

<https://daneshyari.com/en/article/11025279>

Download Persian Version:

<https://daneshyari.com/article/11025279>

[Daneshyari.com](https://daneshyari.com)