

## Research Space

Journal article

**A pilot study to assess radiographer preliminary clinical evaluation (PCE) introduced for emergency department adult appendicular X-ray examinations: Comparison of trained and untrained radiographers.**

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This is the author accepted manuscript of:

T. Lidgett, L. Pittock, K. Piper, N. Woznitza,

A pilot study to assess radiographer preliminary clinical evaluation (PCE) introduced for emergency department adult appendicular X-ray examinations: Comparison of trained and untrained radiographers,

Radiography,

Volume 29, Issue 2,

2023,

Pages 307-312,

ISSN 1078-8174,

<https://doi.org/10.1016/j.radi.2023.01.003>.

<https://www.sciencedirect.com/science/article/pii/S1078817423000032>)

## Tables

**Table 1: Radiographer PCE Course Content**

Upper Limb	Lower Limb
Shoulder and Humerus	Pelvis and Femur
<ul style="list-style-type: none"> <li>▪ ACJ injuries</li> <li>▪ Scapula blade and process fractures</li> <li>▪ Proximal humerus fracture patterns</li> <li>▪ Anterior and posterior shoulder dislocations</li> <li>▪ Humeral shaft fractures</li> </ul>	<ul style="list-style-type: none"> <li>▪ Pelvic fractures and dislocations</li> <li>▪ Neck of femur fractures</li> <li>▪ Femoral shaft fractures</li> <li>▪ Condylar and periprosthetic fractures</li> </ul>
Elbow and Forearm	Knee and Lower Leg
<ul style="list-style-type: none"> <li>▪ Supracondylar fractures</li> <li>▪ Medial epicondyle fractures</li> <li>▪ Radial head fractures</li> <li>▪ Forearm fracture dislocations</li> </ul>	<ul style="list-style-type: none"> <li>▪ Joint effusions and lipohaemarthroses</li> <li>▪ Attachment injuries and avulsion fractures</li> <li>▪ Tibial plateau fractures</li> <li>▪ Tibia and fibula shaft fractures</li> </ul>
Wrist and Hand	Ankle and Foot
<ul style="list-style-type: none"> <li>▪ Extra and intra-articular distal radius fractures</li> <li>▪ Carpal bone fractures, dislocations and dissociations</li> <li>▪ Metacarpal fractures and dislocations</li> <li>▪ Phalangeal fractures and dislocations</li> </ul>	<ul style="list-style-type: none"> <li>▪ Weber classification of ankle fractures</li> <li>▪ Tarsal bone fractures</li> <li>▪ Metatarsal fractures and dislocations</li> <li>▪ Lisfranc ligament and other attachment injuries</li> <li>▪ Phalangeal fractures and dislocations</li> </ul>

**Table 2: Radiographer PCE Commenting Participation**

	Radiographer	PCE Comments	Eligible Population	Participation
Trained Group	1	103	122	84.4%
	2	75	88	85.2%
	3	55	64	85.9%
	4	12	34	35.3%
	5	8	8	100%
Untrained Group	6	77	95	81.1%
	7	71	130	54.6%
	8	44	82	53.7%
	9	42	81	51.9%
	10	41	92	44.6%
Trained Group		253	316	80.1%
Untrained Group		275	480	57.3%
<b>Total</b>		<b>528</b>	<b>796</b>	<b>66.3%</b>

**Table 3:** Radiographers' PCE Accuracy Scores

Radiographer		Samples	TP	TN	FP	FN	Sensitivity	Specificity	Accuracy
Trained Group	1	103	26.75	63.75	8.00	4.50	0.86	0.89	0.88
	2	75	24.50	43.75	1.75	5.00	0.83	0.96	0.91
	3	55	16.00	34.50	3.50	1.00	0.94	0.91	0.92
	4*	12	7.00	4.00	1.00	0.00	1.00	0.80	0.92
	5*	8	3.25	3.00	0.00	1.75	0.65	1.00	0.78
Untrained Group	6	77	20.00	50.50	4.00	2.50	0.89	0.93	0.92
	7	71	24.00	36.50	3.50	7.00	0.77	0.91	0.85
	8	44	12.75	27.00	1.00	3.25	0.80	0.96	0.90
	9	42	14.50	22.75	3.75	1.00	0.94	0.86	0.89
	10	41	9.25	27.00	1.00	3.75	0.71	0.96	0.88
Trained Group		253	77.50	149.00	14.25	12.25	0.86	0.91	0.90
Untrained Group		275	80.50	163.75	13.25	17.50	0.82	0.93	0.89
<b>Total</b>		<b>528</b>	<b>158.00</b>	<b>312.75</b>	<b>27.50</b>	<b>29.75</b>	<b>0.84</b>	<b>0.92</b>	<b>0.89</b>

**Key:** Participants with low case numbers indicated with asterisks.

**Table 4:** Radiographer Body Part Examination Type Sample Quantities

Radiographer		XR Shoulder or Humerus	XR Elbow	XR Forearm or Wrist	XR Hand, Fingers or Thumb	XR Pelvis & Hips	XR Femur or Knee	XR Lower Leg or Ankle	XR Foot or Toes
Trained Group	1	12	4	12	23	8	21	13	10
	2	8	5	8	10	5	11	17	11
	3	7	4	6	9	3	8	8	10
	4*	1	0	1	4	1	2	1	2
	5*	3	0	1	3	1	0	0	0
Untrained Group	6	7	3	12	18	3	10	11	13
	7	7	2	9	17	3	9	13	11
	8	5	2	6	7	7	1	10	6
	9	8	4	3	9	3	5	5	5
	10	7	1	3	7	2	3	12	6
Trained Group		31	13	28	49	18	42	39	33
Untrained Group		34	12	33	58	18	28	51	41
<b>Total</b>		<b>65</b>	<b>25</b>	<b>61</b>	<b>107</b>	<b>36</b>	<b>70</b>	<b>90</b>	<b>74</b>

**Key:** Participants with low case numbers indicated with asterisks.

**Table 5: Radiographer PCE False Negatives List, Cases with Single Abnormalities**

Upper Limb	Lower Limb
<ul style="list-style-type: none"> <li>▪ ACJ subluxations and dislocation (x2)</li> <li>▪ Non-displaced humeral greater tuberosity fracture</li> <li>▪ Non-displaced distal radius fractures (x3)</li> <li>▪ Non-displaced middle finger metacarpal spiral fracture</li> <li>▪ Index metacarpal neck fracture with mild angulation</li> <li>▪ Thumb metacarpophalangeal joint collateral ligament avulsion fractures (x4)</li> <li>▪ Subtle finger volar plate avulsion fracture</li> <li>▪ Non-displaced finger tuft fracture</li> </ul>	<ul style="list-style-type: none"> <li>▪ Displaced intertrochanteric neck of femur fracture</li> <li>▪ Subtle non-displaced acetabular fracture</li> <li>▪ Non-displaced medial malleolus fracture</li> <li>▪ Non-displaced fibula lateral malleolus tip avulsion fracture</li> <li>▪ Non-displaced toe proximal phalanx collateral ligament avulsion fracture</li> <li>▪ Mildly displaced fourth toe proximal phalanx fracture</li> </ul>

**Table 6: Radiographer PCE False Negatives List, Cases with Multiple Abnormalities**

Upper Limb	
Identified	Omitted
<ul style="list-style-type: none"> <li>▪ No injury</li> <li>▪ Relocated glenohumeral joint</li> <li>▪ Humeral greater tuberosity fracture</li> <li>▪ Displaced ring finger metacarpal fracture</li> </ul>	<ul style="list-style-type: none"> <li>▪ ACJ dislocation and rib fracture</li> <li>▪ Hill-Sachs lesion</li> <li>▪ Humeral surgical neck fracture</li> <li>▪ Non-displaced little finger metacarpal spiral fracture</li> </ul>
<ul style="list-style-type: none"> <li>▪ Distal radius fracture</li> <li>▪ Finger PIPJ dislocation</li> <li>▪ Mallet finger avulsion fracture</li> </ul>	<ul style="list-style-type: none"> <li>▪ Distal ulna / ulna styloid fracture (x5)</li> <li>▪ Avulsion fracture</li> <li>▪ DIPJ subluxation</li> </ul>
Lower Limb	
<ul style="list-style-type: none"> <li>▪ No injury</li> <li>▪ Bimalleolar fracture</li> <li>▪ Distal fibula fracture</li> <li>▪ Distal fibula fracture</li> <li>▪ Talus dislocation and distal fibula fracture</li> </ul>	<ul style="list-style-type: none"> <li>▪ Metatarsal neck fractures</li> <li>▪ Posterior malleolus fracture (x2)</li> <li>▪ Posterior malleolus fracture</li> <li>▪ Lateral talar shift (x2)</li> <li>▪ Distal tibia fracture</li> </ul>