Promoting diagnostic accuracy in general practitioner management of otitis media in children: findings from a multimodal, interactive workshop on tympanometry and pneumatic otoscopy

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ABSTRACT

Aim Previous research has shown that general practitioners (GPs) rarely use pneumatic otoscopy or tympanometry as recommended by best practice guidelines for diagnosing otitis media. The purpose of this study was to determine whether a multimodal, interactive training workshop on the techniques of pneumatic otoscopy and tympanometry would improve the confidence of GPs for the diagnosis of otitis media with effusion (OME) and acute otitis media (AOM), and for using pneumatic otoscopy and tympanometry. Additionally, we sought to determine whether this training could change GPs’ intentions for using pneumatic otoscopy and tympanometry in their practices.

Methods Twenty-three GPs participated in a three-hour training workshop led by an ear, nose and throat (ENT) surgeon, a paediatrician and an audiologist. Prior to and following the workshop, GPs completed questionnaires indicating their previous use and beliefs about the usefulness of pneumatic otoscopy and tympanometry, confidence for diagnosing AOM and OME, confidence for using pneumatic otoscopy and tympanometry, and intention to use pneumatic otoscopy and tympanometry in the future.

Results There were no differences (\(P > 0.05\)) from pre- to post-workshop in GP confidence for diagnosing AOM. There were increases in GP confidence for diagnosis of OME (pre: 4.5 ± 0.9, post: 4.9 ± 0.4, \(P < 0.01\)) and confidence for using pneumatic otoscopy (pre: 3.6 ± 1.6, post: 4.8 ± 1.0, \(P < 0.01\)) and tympanometry (pre: 3.3 ± 1.5, post: 5.0 ± 0.7, \(P < 0.01\)), but no change (\(P > 0.05\)) in intention to use pneumatic otoscopy or tympanometry in their practices in the future.

Conclusion These results suggest that a multimodal, interactive workshop can significantly increase the confidence of GPs for diagnosis of OME and also for using pneumatic otoscopy and tympanometry. It is likely, however, that GPs will need follow-up and further practice with these techniques to implement them in their practices.

Keywords: clinical competence, continuing medical education, evidence-based medicine, general practice, otitis media
Introduction

Otitis media (OM) is a major cause of morbidity in children and is one of the most common reasons for antibiotic prescriptions within the primary care context. OM can be defined as middle ear inflammation with effusion present and includes disorders ranging from a single bout of acute otitis media (AOM) to otitis media with effusion (OME). A diagnosis of AOM would require signs and symptoms of middle ear inflammation (fever, otalgia, otorrhoea or irritability) and rapid-onset middle ear effusion. At the other end of the continuum, OME is also middle ear effusion, but with the absence of symptoms of acute infection. Despite OM being a common reason for general practice consultations, the difficulty of otoscopic examination in young children, and the variable appearance of the tympanic membrane in OM contribute to the general practitioner’s (GP’s) diagnostic dilemma. GP management of OM often falls outside best practice guidelines, and may be affected by diagnostic inaccuracy.

An accurate diagnosis of OM requires detection of middle ear effusion, which best practice guidelines state can only be reliably confirmed through the utilisation of tympanometry or pneumatic otoscopy. There is evidence that GPs tend to over diagnose AOM and under diagnose OME. GPs and paediatricians underutilise pneumatic otoscopy and tympanometry in the clinical assessment of children’s ears and this has an inevitable negative impact on their diagnostic accuracy.

Australia’s leading OM researchers have recently recommended that research aiming to improve diagnostic accuracy is needed in order to ensure appropriate treatment of OM. There is a clear need for GP training in the diagnosis and management of OM given the prevalence of AOM and OME in the general practice setting, the diagnostic difficulties impacting on management and the demonstrated underutilisation of well-evidenced diagnostic tools. Despite these clear training needs, the literature around the breadth, depth, and scope of training requirements for GPs in the use of these techniques is inconclusive. Diagnosis by ear, nose and throat (ENT) surgeons using pneumatic otoscopy or otoscopy and tympanometry has been considered a gold standard in the diagnosis of middle ear effusion. Pneumatic otoscopy seems to be an acceptable technique for office diagnosis, but extensive training or extended practice may be required for proficiency to be achieved. A study by Kaleida and Stool a three-month otoscopic validation programme for junior doctors was examined. The authors concluded that a reasonable standard of accuracy with pneumatic otoscopy was achieved, but the programme required an impractical amount of time.

A study examining GP use of tympanometry, showed that a three-hour training session was adequate for detection of OME when GPs’ interpretations were compared with three doctors who were experienced at tympanometry. The same study included a one-year follow-up period with extended use of tympanometry, revealing that prolonged experience in interpretation of tympanometry did not further improve the quality of the interpretation.

Use of pneumatic otoscopy or tympanometry increases the accuracy of diagnosis of OM markedly over non-pneumatic otoscopy. However, it is unclear which technique is more effective and acceptable in general practice or the extent of the training requirements. Tymanometry has advantages over pneumatic otoscopy as it generally requires less training and can be externally validated by a subsequent review of tympanometry results. Pneumatic otoscopy is
much less expensive and in well-trained hands has been shown to have good validity.\textsuperscript{19,21,25}

One possible reason for the observed reluctance of GPs to use these gold standard diagnostic techniques may be lack of training, and therefore confidence in their ability to use them. Although this has not previously been investigated in an Australian context, the main reason cited by family practice residents in a study undertaken in the USA for not using pneumatic otoscopy and tympanometry was lack of training.\textsuperscript{26} As adult learners and practitioners, doctors learn best through interactive workshops delivered through multiple modes of instruction with multiple opportunities to practice.\textsuperscript{27,28} Multimodal training, using a mix of interactive and didactic teaching, has been shown in systematic reviews to provide the best evidence for behaviour change and learning in postgraduate continuing education.\textsuperscript{27,28} It remains unclear, however, how much and what sort of training is required by GPs and other clinicians.\textsuperscript{12} Providing training in pneumatic otoscopy and tympanometry in an abridged form to GPs may be acceptable to increase the use of these techniques in general practice.

The aim of the current study was to evaluate the effectiveness of a three-hour multimodal interactive training workshop on the techniques of pneumatic otoscopy and tympanometry in improving the GPs’ confidence in ability for diagnosis of OME and AOM through the use of pneumatic otoscopy and tympanometry. Additionally, we sought to determine whether or not the workshop altered participants’ intention to use pneumatic otoscopy and tympanometry in their practices in the future.

Methods

Participants

Twenty-three GPs participated in a three-hour multimodal, interactive training workshop led by an ENT surgeon, a paediatrician with a special interest in ear disease, and a paediatric audiologist. GPs were recruited through newsletters sent via a local Division of General Practice. GPs attending the workshop were included in analysis if they provided written informed consent and were currently practicing.

Study design

Multimodal, interactive workshop format

The workshop included: pre-reading and access to an online training resource (ePROM),\textsuperscript{29} a didactic presentation on OM, expert presentations and demonstrations of use of tympanometry and pneumatic otoscopy, hands-on experience in pneumatic otoscopy and tympanometry and guided video examples. For those who enrolled in the subsequent study to investigate the usefulness of tympanometry and pneumatic otoscopy in general practice, practice with equipment in the clinical setting as well as support and visits by a GP expert in tympanometry and pneumatic otoscopy were offered.

Immediately before and after the training workshop, GPs completed questionnaires indicating their previous use of pneumatic otoscopy and tympanometry, beliefs about the usefulness of pneumatic otoscopy and tympanometry, confidence for diagnosing AOM and OME, and intention to use pneumatic otoscopy and tympanometry. Following the workshop, participants were invited to join a follow-up study where they were provided with the relevant equipment for use in their practices, supported by practice visits from an experienced GP educator skilled in the use of the equipment. All research components were reviewed and approved by the University of Western Sydney Human Research Ethics Committee.

Pre-workshop supporting materials provided

Prior to the workshop, participants were given pre-reading as well as access to a series of online training videos that were available as part of a paediatrics medical education website (ePROM resource)\textsuperscript{29} demonstrating diagnosis of otitis media. These resources were an adjunct to hands-on experience provided in the workshop and were used to assist GPs in increasing their knowledge about OM as well as confidence for diagnosing AOM and OME using either pneumatic otoscopy or tympanometry. The online training videos were also made available to participants during the course of the workshop. The format of the multimodal, interactive workshop is presented in Figure 1.

Otitis media overview

An information session was provided by a paediatrician to the entire group of GPs. Information included the epidemiology of OM in children, diagnosis of OM, and a description of best practice guidelines and evidence-based treatment of OM. Following the large group session, the GPs were divided into two groups with one group attending a skills session on pneumatic otoscopy and the other group attending a skills session on tympanometry. Each group received both sessions (pneumatic otoscopy and tympanometry) prior to returning to the large group.
**Pneumatic otoscopy skills session**
The hands-on skills session for pneumatic otoscopy, led by an ENT surgeon, began with a brief presentation about pneumatic otoscopy, including guided videos of normal and abnormal otoscopy. The presentation was followed by demonstration of the technique on participant volunteers. Finally, participants practiced on each other with the ENT surgeon giving feedback and answering queries.

**Tympanometry skills session**
The hands-on skills session for tympanometry was led by a paediatric audiologist who provided participants with an overview and practical information on...
operating the tympanometer and interpreting the findings. Following demonstrations given by the paediatric audiologist, participants practiced using the technique on fellow participants with the audiologist providing feedback on technique and answering queries.

Materials

A questionnaire comprised of Likert-type items was developed for the current study and consisted of four main constructs. These constructs included: previous use of pneumatic otoscopy and tympanometry (baseline only; never to always), for example, ‘I have previously used pneumatic otoscopy in my practice’; beliefs that pneumatic otoscopy and tympanometry are valuable diagnostic tools (disagree to agree), for example, ‘I believe tympanometry is a valuable diagnostic tool’; confidence for diagnosing acute otitis media and confidence for using pneumatic otoscopy and tympanometry (disagree to agree), for example, ‘I am confident I could diagnose acute otitis media’ and confidence for using pneumatic otoscopy and tympanometry in their practices in the future (never to with every consultation requiring standard otoscopy), for example, ‘I plan to use tympanometry in addition to standard otoscopy in my practice in the future’.

Subsequent study enrolment and ongoing support

To reinforce learning from the workshop, participants were encouraged to continue to view the online video resource (ePROM) provided prior to the workshop. At the conclusion of the workshop, participating GPs were asked if they would like to participate in a subsequent study which included use of these two diagnostic techniques in their practice. Study participants were able to elect to have a two-week lead-in practice time with the study equipment in order to gain confidence with using the techniques prior to the commencement of the study. GPs who volunteered for the follow-up study were offered the relevant equipment and one or two follow-up visits by a GP trained in pneumatic otoscopy and tympanometry to reinforce key messages from the workshop and assist the GPs with the diagnostic techniques in the clinical environment.

Statistics

SPSS (version 18.0; SPSS Inc., Chicago, IL, USA) was used for all analyses. Data are expressed as mean ± SD and significance was set at $P<0.05$ for all analyses. Parametric assumptions were not markedly violated for any variables used in the analyses. Item frequencies were ascertained for questionnaire responses. Associations were determined using Pearson’s correlations. Paired $t$-tests were used to determine pre- to post-workshop differences in all questionnaire items.

Results

Pre-workshop use of tympanometry and otoscopy

Frequencies of use of tympanometry and pneumatic otoscopy are presented in Table 1. Pre-workshop, 19 of 23 GPs (83%) indicated that they never used pneumatic otoscopy and 16 of 23 GPs (70%) indicated that they never used tympanometry in their practices.

Pre-workshop beliefs about the usefulness of tympanometry and otoscopy

Frequencies of beliefs about the usefulness of tympanometry and pneumatic otoscopy are shown in Table 2. Pre-workshop, 16 of 21 GPs (74%) indicated that they agreed or strongly agreed that pneumatic otoscopy was a valuable diagnostic tool and 19 of 22 GPs (83%) agreed or strongly agreed that tympanometry was a valuable diagnostic tool.

Confidence pre- and post-workshop

Questionnaire responses at pre- and post-workshop are presented in Table 3. Pre-workshop, the average GP confidence for using tympanometry was 3.3 (± 1.5) with six of 22 GPs (27%) indicating that they agree or strongly agree with being confident that they could use tympanometry in their practice. For pneumatic otoscopy, the average GP confidence was 3.6 (± 1.6) with nine of 21 GPs (43%) indicating that they agree or strongly agree for being confident they could use pneumatic otoscopy in their practice. The average GP confidence for accurately diagnosing OME was 4.5 (± 0.9) with 12 of 22 GPs (55%) indicating that they agree or strongly agree with being confident that they could diagnose OME. The average GP confidence for accurately diagnosing acute otitis media was 4.9 (± 0.4) with 19 of 22 GPs (86%) indicating that they agree or strongly agree with being confident that they could diagnose AOM.

Pre- and post-workshop relationships

Pre-workshop, previous use of tympanometry was negatively associated with confidence for diagnosing
**Table 1** Response frequencies pre- and post-workshop for past use and intention for future use

<table>
<thead>
<tr>
<th>Item</th>
<th>Never</th>
<th>Rarely</th>
<th>Occasionally</th>
<th>Regularly</th>
<th>With every consultation requiring standard otoscopy</th>
<th>Uncertain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>Used tympanometry in the past</td>
<td>16</td>
<td>–</td>
<td>3</td>
<td>–</td>
<td>3</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>–</td>
</tr>
<tr>
<td>Used pneumatic otoscopy in the past</td>
<td>19</td>
<td>–</td>
<td>2</td>
<td>–</td>
<td>0</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>–</td>
</tr>
<tr>
<td>Plan to use tympanometry in the future</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>–</td>
</tr>
<tr>
<td>Plan to use pneumatic otoscopy in the future</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Items were scaled from 0 (never) to 4 (with every consultation requiring standard otoscopy).
Table 2: Response frequencies pre- and post-workshop for beliefs and confidence

<table>
<thead>
<tr>
<th>Belief</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
<th>Somewhat agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>Believe tympanometry is a valuable diagnostic tool</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Believe pneumatic otoscopy is a valuable diagnostic tool</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Confident I could use tympanometry in my practice</td>
<td>3</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Confident I could use pneumatic otoscopy in my practice</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Confident I can diagnose middle ear effusion</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Confident I can diagnose acute otitis media</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Items were scaled from 1 (strongly disagree) to 6 (strongly agree).
OME ($r = -0.45$, $P < 0.05$) indicating that those who had used tympanometry more frequently, were less confident that they could diagnose OME. Confidence for diagnosing OME was positively associated with planning to use tympanometry in the future ($r = 0.69$, $P < 0.01$). Confidence for diagnosing AOM was significantly greater than confidence for diagnosing OME ($t(21) = -2.89$, $P < 0.01$; AOM: 4.91 vs. OME: 4.45).

At post-test, confidence for using tympanometry was positively associated with confidence for diagnosing OME ($r = 0.52$, $P < 0.05$) and also for diagnosing AOM ($r = 0.43$, $P < 0.05$). Intentions to use pneumatic otoscopy in the future were also positively associated with confidence for using pneumatic otoscopy at post-test ($r = 0.63$, $P < 0.01$), but intentions for using tympanometry were not associated with confidence for using tympanometry ($P > 0.05$). Confidence for diagnosing AOM remained greater than confidence for diagnosing OME ($t(22) = -2.47$, $P < 0.05$; AOM: 5.13 vs. OME: 4.91).

**Pre- to post-workshop differences**

Table 3 Pre- to post-workshop differences

<table>
<thead>
<tr>
<th></th>
<th>Pre-workshop</th>
<th>Post-workshop</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>($n = 23$)</td>
<td>($n = 23$)</td>
<td></td>
</tr>
<tr>
<td>Plan to use tympanometry in the future</td>
<td>2.4 ± 1.0</td>
<td>2.8 ± 0.4</td>
<td>0.18</td>
</tr>
<tr>
<td>Plan to use pneumatic otoscopy in the future</td>
<td>2.5 ± 0.7</td>
<td>2.6 ± 0.7</td>
<td>0.67</td>
</tr>
<tr>
<td>Believe tympanometry is a valuable diagnostic tool</td>
<td>5.2 ± 0.7</td>
<td>5.3 ± 1.0</td>
<td>0.87</td>
</tr>
<tr>
<td>Believe pneumatic otoscopy is a valuable diagnostic tool</td>
<td>5.1 ± 0.7</td>
<td>5.4 ± 0.7</td>
<td>0.08</td>
</tr>
<tr>
<td>Confident I could use tympanometry in my practice</td>
<td>3.3 ± 1.5</td>
<td>5.0 ± 0.7</td>
<td>0.001*</td>
</tr>
<tr>
<td>Confident I could use pneumatic otoscopy in my practice</td>
<td>3.6 ± 1.6</td>
<td>4.8 ± 1.0</td>
<td>0.003*</td>
</tr>
<tr>
<td>Confident I can diagnose middle ear effusion</td>
<td>4.5 ± 0.9</td>
<td>4.9 ± 0.4</td>
<td>0.009*</td>
</tr>
<tr>
<td>Confident I can diagnose acute otitis media</td>
<td>4.9 ± 0.4</td>
<td>5.1 ± 0.6</td>
<td>0.14</td>
</tr>
</tbody>
</table>

*Significantly different between pre- and post-workshop. The first two items are scaled from 0 (never) to 4 (with every consultation requiring standard otoscopy). All other items are scaled from 1 (strongly disagree) to 6 (strongly agree).

Discussion

The results of the current study indicate that following a three-hour multimodal, interactive training workshop led by an ENT surgeon, paediatric audiologist and paediatrician, GPs’ confidence for using pneumatic otoscopy and tympanometry as well as confidence for diagnosing OME was significantly higher than pre-workshop levels. Although confidence for use of these diagnostic techniques improved, there was no increase in GPs intention to use these techniques in their practices in the future.

Although GPs viewed pneumatic otoscopy and tympanometry as valuable diagnostic tools, they did not use them in their practice, supporting previous research. Although guidelines indicate that either tympanometry or pneumatic otoscopy is necessary for an accurate diagnosis of OME or AOM, most GPs were fairly confident that they could accurately diagnose OME or AOM, despite not using these techniques. This confidence for appropriate diagnosis without use of these techniques could at least partially explain the disconnect between confidence in using...
the techniques and GPs’ use of them in their practices. Given that increases in confidence to use tympanometry and pneumatic otoscopy were seen, but intentions to use these techniques were not, it appears that there are other factors involved in the uptake of these techniques. The GP context is complex and multifactorial and not every consultation requiring standard otoscopy can be viewed in the same way. Although not comprehensive by any means, some potential barriers to translating confidence in the use of these techniques into an intention to use them or actual use in practice would include things like consultation length, patient acceptability, cost of equipment and access to equipment. The complexity of the GP consultation and the barriers to implementation are reflected by the fact that none of the GPs indicated at post-workshop that they would use these techniques with every consultation requiring standard otoscopy.

Prior to the workshop, previous use of tympanometry was negatively associated with confidence for diagnosing OME, suggesting that previous use of tympanometry may have elucidated the diagnostic difficulties of OM. At post-workshop, confidence for using tympanometry was associated positively with both confidence for diagnosing OME and also AOM, potentially explaining the aforementioned relationship between previous use of tympanometry and confidence for diagnosing OME.

Despite the questionnaire responses indicating that confidence for using tympanometry and pneumatic otoscopy increased following the workshop, the effectiveness of this training alone is likely to be limited without further opportunities to practice these techniques. This proposition is supported by observations of recruitment of workshop participants into a subsequent study which used tympanometry and pneumatic otoscopy in GPs’ practices (unpublished data). GP participants in this subsequent study were provided with ongoing support from a GP expert in tympanometry and pneumatic otoscopy, including one or two practice visits and phone support. Additionally, several of the participants required a trial period with the equipment in their practice prior to the beginning of data collection. In this group of GPs, for implementation of these diagnostic techniques to occur in practice, even just in the context of a research study, further training and practice for both diagnostic techniques was required. A three-hour workshop such as the one used in this study appears to be a good starting point for improving confidence in the use of tympanometry and pneumatic otoscopy, but further research needs to examine how best to provide ongoing support and training to best increase uptake of these techniques.

**Limitations**

Participant numbers were small, as was necessary for the hands-on nature of the training workshop. Despite these small numbers, we were able to detect differences in confidence for using pneumatic otoscopy and tympanometry, as well as confidence for diagnosing OME from pre- to post-workshop. Owing to time limitations it was not possible to include an assessment of clinical skills in use of pneumatic otoscopy and tympanometry. Although these outcomes were not the primary aims of the workshop, it would have been useful to determine whether or not confidence and intention for use of these techniques reflected the GPs’ skill in using them.

GP participants in this subsequent study were provided with ongoing support from a GP expert in tympanometry or pneumatic otoscopy. While the multimodal, interactive workshop described in the current paper appears to have had an impact on participant confidence in use of pneumatic otoscopy and tympanometry, as well as diagnosis of OME, further opportunities to reinforce learning appear to be required to effect the intention to change practice.

**Public health implications**

There is a clear public health impact related to upskilling GPs in the use of these diagnostic techniques. Despite best practice guidelines indicating that pneumatic otoscopy and tympanometry are necessary for an accurate diagnosis of effusion, previous research has clearly shown that GPs do not typically use tympanometry or pneumatic otoscopy, and there is potential for improvement in the diagnosis of AOM or OME with the addition of these techniques.  

**Conclusions**

These findings provide information regarding the importance of training for GPs in the techniques of
pneumatic otoscopy and tympanometry. Brief training workshops in these diagnostic techniques can significantly improve confidence for use of the techniques and for diagnosing OME. GPs are likely to require further information and more extensive training to increase intention for future use as well as to change actual practice. Future studies should examine the barriers to use of tympanometry and pneumatic otoscopy as well as the appropriate level of ongoing support necessary for successful translation of training in these techniques to successful use in practice.

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REFERENCES


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**ETHICAL APPROVAL**

Ethics approval was provided by the University of Western Sydney Human Research Ethics Committee.

**PEER REVIEW**

Not commissioned; externally peer reviewed.

**CONFLICTS OF INTEREST**

None.

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